CONSOLIDATED RAIL CORPORATION

SPECIFIC REQUIREMENTS

OF

CONSOLIDATED RAIL CORPORATION

FOR

WORK ON ITS RIGHT OF WAY AND OTHER PROPERTY

APPROVED:

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INDEX

APPENDICES

ADDITIONAL CONRAIL SPECIFICATIONS

- CE-4 - "Specifications for Wire, Conduit and Cable Occupations of Consolidated Rail Corporation" will govern in areas where power or communication lines will be affected.
- CE-8 - "Specifications for Pipeline Occupancy of Consolidated Rail Corporation" will govern in areas where underground and overhead utilities may be affected.
- CE-12 - "Specifications for Design and Construction of Undergrade Railroad Bridges for Grade Separation Projects"
- Consolidated Rail Corporation Operating Guidelines for Contractors
- MW-4 Manual for Construction, Maintenance, and Inspection of Track
- Conrail Industrial Sidetrack Construction Specifications

1.0 GENERAL

1.1 Scope

a. It must be clearly understood that Conrail owns and uses its rights-of-way and other property (collectively, "Conrail Property") for the primary purpose of operating a railroad. All work shall therefore be done in such a manner that Conrail's rail operations and facilities are not interfered with, interrupted or endangered. In addition, any facilities that are installed or constructed as a result of the proposed work shall be located to minimize encumbrance to Conrail Property so that Conrail will have unrestricted use of its property for current and future operations.

b. The sponsor of the project shall be ultimately responsible for assuring that its agents, consultants, contractors and sub-contractors comply fully with the requirements contained herein.

c. The terms and conditions contained herein apply to any project which requires performance of work on Conrail Property.

1.2 Definitions

a.	AREMA	-	American Railway Engineering and Maintenance-of-Way Association Manual for Railway Engineering www.arema.org
b.	Conrail	-	Consolidated Rail Corporation
c.	Conrail Project Engineer	-	the authorized representative of Consolidated Rail Corporation
d.	Overhead Bridge	-	Bridge structure located over the railroad carrying vehicles and/or pedestrians
e.	Permit to Enter	-	Temporary license permitting entry on Conrail Property
f.	Professional Engineer	-	Engineer licensed in the state where the work is to be preformed
g.	Sponsor	-	The entity contracting with Conrail for the performance of the work, its employees, agents, consultants, contractors, sub-contractors, etc.

2.0 REQUIREMENTS FOR ENTRY ONTO CONRAIL PROPERTY

2.1 General

No entry upon Conrail Property shall be permitted without the proper authorization by Conrail to the sponsor in the form of a Permit to Enter, Construction Agreement or other appropriate agreement(s) prepared by Conrail, fees have been paid, insurances have been approved, and the appropriate Conrail representative has been notified and given permission to begin work. The location and design of that portion of the access route to the project site that is on Conrail Property shall be shown clearly on any plans for the project and approved by Conrail.

2.2 Temporary License Permitting Entry on Property

a. A Permit to Enter shall only be used to perform short duration work including surveying, bridge inspections, soil borings, test pits, minor bridge repairs, painting and tree trimming.

b. An application for a Permit to Enter is to be submitted to the Chief Engineer - Design and Construction, 330 Fellowship Road, Suite 300, Mount Laurel, NJ 08054-2355, and must include the following:

   1. Fully completed Application Form.
   2. Application letter describing the work to be performed and the anticipated duration of the work.
   3. Map of sufficient scale and detail which clearly indicates the proposed work site.
   4. Drawing(s) for the project that clearly show the location and design of the project site and access route that is on Conrail Property.
   5. Drawing(s) showing limits of work with respect to any railroad track(s), communication and signal equipment and other railroad facilities.

c. Upon receipt of the above and if the proposed work is determined to be acceptable, Conrail will send two (2) copies of a Permit to Enter to the sponsor for execution. The sponsor is to execute and return both copies to Conrail for execution with the specified payment for the license. One (1) fully-executed original of the Permit to Enter will be returned to the sponsor with the name of the Conrail Project Engineer who must be contacted to schedule the proposed work.

d. Prior to the start of work the sponsor may be required to provide Conrail with an advance deposit to cover all Conrail costs related to the project, including, but not limited to, engineering review, meetings, flag protection and inspection.

e. Prior to entering Conrail Property, Conrail's Project Engineer will require the following information to be submitted for review and approval:

   1. A site specific work plan detailing all proposed operations on, over, or adjacent to Conrail Property (Appendix A-1).
   2. Insurance certificates in accordance with Section 2.6 of this specification.

f. It is to be clearly understood that the issuance of a Permit to Enter does not constitute authority to proceed with any construction work that requires a Construction Agreement. Construction may not begin until a formal Construction Agreement between Conrail and the sponsor has been executed and the sponsor receives permission from Conrail's representative to proceed with the work (*see* Section 2.3).

2.3 Construction Agreement

a. A Construction Agreement shall be prepared for all construction work which changes the physical characteristics of Conrail Property (*e.g.*, highway grade crossings, bridge reconstructions, track changes, *etc.*) and/or requires Conrail personnel to perform substantial work for the sponsor's project.

b. An application for a Construction Agreement is to be submitted to the Chief Engineer Design and Construction, 330 Fellowship Road, Suite 300, Mount Laurel, NJ 08054-2355, and must include the following:

   1. Name of project sponsor, address, contact name and phone number.
   2. Application letter describing the project and the anticipated schedule.
   3. Map of sufficient scale and detail which clearly indicates the proposed work site.

4. Drawing(s) for the project that clearly show the location and design of that portion of the project site and access route that is on Conrail Property.
5. Drawing(s) showing limits of work with respect to any railroad track(s), communication and signal equipment and other railroad facilities.

c. Conrail will prepare a Force Account Estimate for all Conrail work required to complete the work detailed in the Construction Agreement. Prior to the start of work the sponsor may be required to provide Conrail with an advance deposit to cover all Conrail costs detailed in the Force Account Estimate.

d. Upon approval of the construction drawings, Conrail will send two (2) copies of the agreement to the sponsor for execution. The sponsor is to execute and return both originals to Conrail for execution. One (1) fully-executed original will be returned to the sponsor with the name of the Conrail Project Engineer who must be contacted to schedule the proposed work.

e. Prior to entering Conrail Property, Conrail's Project Engineer will require the following information to be submitted for review and approval:

1. A site-specific work plan detailing all proposed operations on, over, or adjacent to Conrail property (Appendix A-1).
2. Insurance certificates in accordance with Section 2.6 of this specification.

2.4 Environmental Agreements

a. When major excavation work, or other potentially environmentally sensitive work (as determined by Conrail), is to be performed on Conrail Property the project sponsor shall enter into an environmental right of entry agreement with Conrail, with the specific type of agreement to be determined by Conrail.

b. The sponsor shall assume all liability and responsibility for any material that is disturbed. This includes, but is not limited to, any and all DEP or EPA-required remediation efforts.

c. Conrail may require the sponsor to prepare an Excavated Material and Groundwater Management Plan ("EMGMP"), *see* Appendix A-10, detailing how excavated material and groundwater will be disposed of.

d. At no point shall Conrail be held responsible or liable for any costs of work created by the sponsor's activities.

e. All other provisions of these specifications apply.

2.5 Other Types of Agreements

In the case of a unique project, Conrail may, in the exercise of its sole discretion, require the sponsor to enter into an agreement other than a Permit to Enter, Construction Agreement, or Environmental Right of Entry. In such an event, all other provisions of these specifications shall apply.

2.6 Insurance

a. In addition to any other forms of insurance or bonds required under the terms of any contract or specifications, and except to the extent that any of the requirements of this section are expressly waived or revised in writing by Conrail, prior to the commencement of any work, Sponsor and its subcontractors, at their own cost and expense, shall maintain insurance of the following kinds and amounts and deliver to Conrail satisfactory evidence of such insurance as indicated herein:

1. Commercial General Liability Insurance, including contractual liability, products and completed operations, as well as personal and advertising injury insurance with a per occurrence limit of not less than $5,000,000 and $10,000,000 in the aggregate for all losses including but not limited to damages, bodily injury, death, property damage and legal fees in any one occurrence and for damage to or destruction of property, including the loss of use thereof, in any one occurrence. Coverage must be purchased on an ISO occurrence form or its equivalent. If the required minimum limits can only be met when applying an umbrella/excess liability policy, the umbrella/excess liability policy must follow the form of the underlying policy and be endorsed to "drop down" to become primary in the event the primary limits are exhausted. Conrail shall be added as an additional insured under this coverage. Exclusion of work within fifty (50) feet of railroad right of way shall be deleted (Endorsement CG2417). The policy shall contain a waiver of subrogation in favor of Conrail. The definition of bodily injury should include mental anguish. A per project aggregate limit must be included. Coverage should be primary and non-contributory in favor of Conrail. It is agreed that any workers' compensation exclusion does not apply to payments related to the Federal Employers Liability Act or a Railroad Wage Continuation Program or similar programs, and any payments made are deemed not to be either payments made, or obligations assumed under any workers' compensation, disability benefits, or unemployment compensation law or similar law.

2. Automobile Liability Insurance with a limit of not less than $5,000,000 combined single limit for bodily injury and/or property damage per occurrence. Conrail shall be added as an additional insured under this coverage. Exclusion of work within fifty (50) feet of railroad right of way shall be deleted (Endorsement CA2070). The policy shall contain a waiver of subrogation in favor of Conrail. Coverage should apply to any and all motor vehicles owned. Non-owned, used or hired must be covered and mobile equipment must be covered to the extent it may be excluded from the general liability insurance. Coverage should be primary and non-contributory in favor of Conrail.

3. Workers' Compensation/Employers' Liability and Occupational Disease Insurance with Limits of $1,000,000 each accident, $1,000,000 policy limit and $1,000,000 each employee. Such Policy shall include a waiver of subrogation in favor of Conrail (if allowable in by state law).

4. Pollution Liability Insurance of not less than $5,000,000 per claim and $10,000,000 aggregate applying to each annual period, subject to a deductible or self-insured retention not to exceed $25,000 per occurrence (unless approved in advance by Conrail) covering bodily injury, property damage including Natural Resource Damage) environmental damage, cleanup costs and defense of third-party claims caused by pollution conditions arising out of work by the Sponsor. Coverage may be written on an occurrence or claims-made form, but if claims-made coverage is provided, Sponsor agrees to use best efforts to renew the coverage with the same terms, conditions and limits for at least three years following the termination of this Agreement. Coverage shall be provided for claims arising out of pollution conditions occurring at non-owned disposal sites and for the transportation of materials, including the transportation of wastes to or from a site where covered operations are conducted. Conrail shall be added as an additional insured under this insurance.

5. Professional Liability Insurance (if applicable) with limits of not less than $5,000,000 per claim and $5,000,000 in the aggregate applying to each annual period, subject to a deductible or self-insured retention not to exceed $50,000 per occurrence (unless approved otherwise in advance by Conrail) covering claims arising out of alleged or actual negligence in the rendering or failure to render professional services related to the work by the Sponsor.

Coverage shall be written on a claims-made form with a retroactive date preceding the date this Agreement was executed. Sponsor shall use best efforts to renew this coverage with the same terms, conditions and limits for at least three years following the termination of this Agreement. Defense costs shall be included within the limits of liability specified above.

6. Property Insurance, insuring Sponsor's property of every kind and description and property of persons claiming by or through Sponsor against those risks normally encompassed in an "all-risk" policy, including, but not limited to, (1) loss or damage by fire; (2) loss or damage from such other risk or hazards now or hereafter embraced by an "extended coverage endorsement, " (3) loss for flood if the area/property upon which Sponsor is working is a designated flood or flood insurance area; and (4) such other risks as reasonably prudent owner of similar property in the locality where the work area is located would normally insure against. Such insurance shall provide for the full replacement cost in the event of a total destruction of Sponsor's property. A waiver of subrogation shall be provided in favor of Conrail.

7. With respect to the work performed by it or any of its subcontractors, Sponsor shall provide Railroad Protective Liability Insurance in the name of Consolidated Rail Corporation with a limit of not less than $5,000,000 per occurrence, combined single limit for bodily injury and/or property damage, for damage to or destruction of property, including the loss of use thereof. Such insurance shall also contain an aggregate of not less than $10,000,000 for damages arising out of more than one occurrence. Conrail shall be the only Named Insured on the policy. The policy shall be endorsed to include broad form coverage for property damage "Physical Damage to Property Definition Amendment", Sudden and Accidental Pollution and Evacuation Expenses.

8. The insurance coverages specified above are the minimum limits of insurance to protect Conrail, the Sponsor and its subcontractors, and shall not be construed as a maximum or limitation on the coverage that may be purchased to protect Conrail. Conrail shall be covered by the insurance coverages specified above to the full extent of the actual limits of insurance purchased by Sponsor and its subcontractors.

9. The insurance coverages purchased by Sponsor and its subcontractors shall in all cases be considered primary to all other coverage available or potentially available to Conrail, and there shall be no right to contribution with any other insurance of Conrail.

10. The insurance coverages specified above (except the Railroad Protective Insurance policy) shall be carried for at least three years after the project is satisfactorily completed and formally accepted by Conrail.

11. Before commencing work, the above-specified insurance coverages from insurance companies lawfully authorized to do business in the state where the project is located shall be in place and maintained until completion and final acceptance of the work, or as otherwise stated herein. Conrail shall have the right, without limitation, to reject any insurance company selected by the Sponsor or any subcontractor, of any tier, that has an A.M. Best rating of less than A or Standard and Poor's rating of less than AA or a Moody's rating of less than Aa.

12. The above-specified insurance coverages shall be enforceable by any legitimate claimant after the termination or cancellation of the project, whether by expiration of time, by operation

of law or otherwise, so long as the basis of the claim against the insurance company occurred during the project and when the insurance was in force.

13. Sponsor shall furnish Conrail with certificates of insurance evidencing the insurance coverages required and shall also furnish the original Railroad Protective Liability Insurance policy at least fourteen (14) days prior to commencement of the project. Certificates shall reference Conrail Project Number assigned to specific project, a description of the work and the project location. Certificates, policies and notices should be sent to Director – Design and Construction, Consolidated Rail Corporation, 330 Fellowship Road, Suite 300, Mount Laurel, NJ 08054, as well as the Project Engineer identified by Conrail.

14. All hazards to be covered shall include the so-called "XCU" coverage for explosion, collapse, and damage where work is to be done over or under Conrail property.

15. Policies shall not contain any punitive damages exclusion.

16. All policies, except the Workers' Compensation/Employers' Liability and Occupational Disease policy, must contain a separation of insureds provision. Separation of insureds must be indicated on the certificate of insurance.

17. All policies shall be endorsed to provide that the insurance company shall give thirty (30) days' prior written notice to Conrail if the policies are to be terminated or if any changes are to be made which shall in any way affect the insurance requirements of the project.

18. Sponsor may not self-insure without the prior written consent of Conrail. If allowed by Conrail, any deductible, self-insured retention or other financial responsibility for claims must be covered directly by Sponsor in lieu of insurance. Any and all Conrail liabilities that, in accordance with the provisions of the agreement governing the project, would otherwise be covered by Sponsor's insurance will be covered as if Sponsor elected not to include a deductible, self-insured retention or other financial responsibility for claims.

19. If any portion of the services are to be subcontracted by Sponsor, Sponsor must require that the independent associates consultant and/or subcontractor provide and maintain the insurance coverages set forth herein, naming Conrail as an additional insured and requiring that the independent associate, consultant, and/or subcontractor release, defend and indemnify Conrail to the same extent and under the same terms and conditions as Sponsor is required to release, defend and indemnify Conrail herein.

20. The fact that insurance (including without limitation, self-insurance) is obtained by Sponsor as required herein will not be deemed to release or diminish the liability of Sponsor to Conrail or to others including, without limitation, liability to Conrail under the defense and indemnity provisions of any other agreement between Conrail and Sponsor. Damages recoverable by Conrail or by others will not be limited by the minimum amounts of insurance set forth above.

2.7 Protection of Railroad Operations

a. The sponsor shall conduct the work in such a manner as to safeguard the operations, facilities, right-of-way and property of Conrail. All work affecting the above items shall be subject to the approval of Conrail. The sponsor's operations adjacent to, over or under Conrail's tracks,

facilities, right-of-way, customer sidetracks, and property shall be governed by Conrail's standards and by such other requirements as specified by Conrail's representative so as to insure the safe operation of trains, prevent delay to trains and insure the safety of all concerned, including the sponsor's forces.

b. Prior to the commencement of any work on or over Conrail Property or track(s), the contractor shall obtain Conrail's written approval for access, method of construction and schedule of work (Site Specific Work Plan, the "SSWP"). The SSWP shall be submitted to Conrail's Project Engineer for approval. The SSWP shall detail all work to be performed including, at a minimum, the access route on Conrail Property to each work location, the contact name and phone number of project superintendent, the work hours, the type of equipment to be used and other applicable items as specified in Sections 3, 4 and 5 of these specifications.

c. An operating track shall be considered obstructed or fouled when any object is brought closer than fifteen (15) feet (4.6 m) horizontally from the centerline of track and projects above the top of tie, or as determined by Conrail's representative.

d. A power line shall be considered fouled when any object is brought to a point less than eight (8) feet (2.5 m) therefrom. The owner of the power line should also be contacted for their requirements.

e. A signal line shall be considered fouled when any object is brought nearer than six (6) feet (1.8 m) to any wire or cable. Cranes, trucks and other equipment shall be considered as fouling the track, power line or signal line when failure or tipping of equipment in any direction, whether working or idle, with or without load, will obstruct the track or other Conrail facilities.

f. All wire and attachments shall be treated as live unless notified by Conrail's representative that same have been de-energized and grounded. Particular attention shall be given to the use of hand lines containing metal strands, which may not be used when working near or above exposed live wires. When working over wires, tools and materials not in use shall be stored in a manner to prevent them from falling. Tools or materials shall not be thrown to or by personnel working over the wires. The sponsor shall be responsible for locating and protecting all underground facilities.

g. Equipment used by the sponsor shall be in first-class condition to preclude any failure that would cause interference with the operation of Conrail trains or damage to its facilities. The sponsor's equipment shall not be placed or put in operation adjacent to the tracks or facilities of Conrail without obtaining clearance from Conrail's representative. All such equipment shall be operated by the sponsor in a manner satisfactory to Conrail. No equipment or material shall be stored on Conrail Property. No equipment shall be refueled on Conrail Property.

h. Minimum overhead and lateral clearances, as specified by Conrail, shall be maintained during the performance of all work. Existing overhead and lateral clearances shall be maintained during construction unless a temporary reduction in clearance for construction purposes is approved in writing by Conrail. The sponsor shall erect a highly visible construction fence no closer than fifteen(15) feet (4.6 m) from the centerline of the track through the work area to ensure that the lateral clearance requirement is being met.

i. The sponsor shall be responsible for damage to Conrail facilities or property arising out of the execution of its work. Conrail shall undertake any necessary repair work at the sole cost and expense of the sponsor. Billing for the work shall be in accordance with Conrail's standard billing procedures.

2.7.1 Operations Requiring Flagman Protection

a. In general, a flagman is necessary in the following circumstances:

1. Driving of sheeting or piles within twenty-five (25) feet (7.6 m) of the tracks.
2. Removal or demolition of all or part of an overhead or adjacent structure.
3. Erection of any structural members.
4. Performance of any other operation that could obstruct or foul (as described above) the tracks or other facilities of Conrail as determined by Conrail's representative.

b. The sponsor must obtain permission from the flagman prior to fouling or obstructing any track. The sponsor may not resume work until the flagman advises the sponsor that it may do so.

c. Painting and paint removal procedures shall be approved by Conrail and inspected by Conrail's representative prior to beginning the work over railroad right-of-way. The sponsor shall protect the track structure and Conrail Property from any material used in conjunction with performing the work. A flagman shall be required whenever the above described work fouls or is likely to foul the track, as previously defined.

d. The sponsor shall give notice to Conrail's representative at least fourteen (14) days in advance of the time work is to be commenced. Conrail shall assign, at the sole cost and expense of the sponsor, conductors and/or flagmen, or other similar qualified employees to protect Conrail's trains and facilities when in the opinion of its representative, the construction work will cause or may cause a hazard to Conrail facilities and the safe operation of trains. No operations of the sponsor shall be carried out without all the necessary protection to properly safeguard the work.

e. The minimum hours per day for railroad employees engaged in flagging service shall be eight (8) hours. The overtime rate will be charged for all time in excess of eight (8) hours. Flagmen are paid from the time they leave headquarters until they arrive back at headquarters. The travel time to and from project site is known as "deadheading" and is paid at full rate of pay, plus travel expenses. No conductor or flagman may remain on duty longer than twelve (12) hours in any twenty-four (24) hour period.

f. The providing of flagmen or inspectors, or the taking of other precautionary measures, shall not, however, relieve the sponsor from liability for payment of damages caused by their operations.

2.8 Railroad Engineering and Inspection

Conrail, at its sole discretion, may assign an engineer or inspector for the general protection of Conrail Property and operations during the construction of the project. This inspection service shall be supplied at the sole cost and expense of the sponsor.

2.9 Payment of Railroad Services

a. Conrail labor shall be charged to sponsor at actual rates plus amounts paid for insurance, railroad retirement, excise taxes, vacation allowances, holidays, health and welfare benefits, small tools, 401(k) payments and overhead in accordance with Conrail's standard billing procedures. Materials shall be charged to the sponsor at actual cost to Conrail plus transportation costs, handling expense and applicable taxes.

b. The sponsor shall reimburse Conrail in full for work undertaken by Conrail in accordance with any provision(s) of these specifications. Final contract payment shall not be made by the sponsor to its contractor, sub-contractor, consultant or agent, until Conrail certifies that all railroad bills against them, if any, have been paid in full.

2.10 Changes in Railroad Facilities

a. Temporary and permanent changes of signal, communication, power transmission lines, trailers, drainage and other railroad facilities required in connection with the project as shown

on the approved construction plans shall be made or caused to be made by Conrail at the sole cost and expense of the sponsor in accordance with Conrail's force account estimate. Any other changes made or services furnished by Conrail at the request of the sponsor shall be the sole cost and expense of the sponsor.

2.11 Temporary Grade Crossing

a. Under most circumstances, a grade crossing of Conrail's track(s) will not be permitted. Should the sponsor demonstrate a necessity for a temporary grade crossing of Conrail's tracks, the sponsor shall be required to apply for and execute the standard private grade crossing agreement for each crossing required. Application for the crossing shall be made to Conrail at least twelve (12) weeks before the crossing is required and addressed to:

Consolidated Rail Corporation
Attn: Chief Engineer Design and Construction
330 Fellowship Road, Suite 300
Mount Laurel, NJ 08054

b. A letter size plan showing the location, size, construction details, and access to the requested crossing should accompany the letter of application. The plan shall be fully detailed and dimensioned with all Conrail facilities shown and referenced. The sponsor shall state the purpose for which the crossing is needed, the type of vehicles that will utilize the crossing, and the expected life of the crossing. All application fees, construction, maintenance, protection and removal costs shall be at the sole cost and expense of the sponsor. The roadbed and all other Conrail facilities will be restored to the original condition subject to the approval of Conrail's designated representative.

d. Projects are to be designed so construction access across the railroad tracks is not required. Construction access grade crossings for contractor operations are not permitted.

3.0 SAFETY REQUIREMENTS

3.1 General

a. All Sponsor personnel must be trained in Conrail safety rules and procedures prior to entering Conrail Property.

b. A job briefing must be conducted each day prior to performing any work on Conrail Property. A job briefing is also required at any time during the day as conditions change or new tasks are started.

c. Personal Protective Equipment, including hard hat, safety glasses, ANSI Class II reflective vest and safety toe shoes, must be worn by all sponsor personnel when on Conrail Property.

3.2 Safety Barrier Fence

a. Safety barrier fence shall be constructed with four (4) feet high, orange HDPE heavy duty mesh. Posts supporting the fabric shall be driven into the ground at a maximum spacing of six (6) feet.

b. Safety barrier fence shall be placed around all open excavations.

c. Safety barrier fence shall be placed between the work area and the adjacent track with the fence located as far from the track as possible, but no closer than fifteen (15) feet from centerline of the adjacent track.

d. Safety barrier fence and supporting posts must be maintained in good condition during the entire project duration.

3.3 Temporary Walkways and Handrail

a. Face of handrails and posts for temporary walkways to be located a minimum of ten (10) feet clear of centerline of the adjacent track for tangent track. Clearance to be increase in accordance with Conrail Standard Drawing 70051-G for track on a curve.

b. Temporary walkways and handrails are to be designed in accordance with AREMA, Chapter 15, Part 8, Section 8.5.

c. All plywood or surfaced lumber used as a walkway shall have a non-skid coating applied to the top surface.

3.4 Work Area Housekeeping

a. Work areas on Conrail Property shall be kept clean and orderly at all times. All trash and debris must be placed in appropriate containers located off of Conrail Property.

b. Ground surface between track and safety barrier fence must be maintained to provide a level walkway area at all times.

c. At the direction of Project Engineer, the track must be monitored for settlement in accordance with section 3.5.

d. Conrail Property may not be used to store construction material or equipment.

e. Conrail Property to be restored to pre-construction conditions at the completion of the project.

3.5 Track Settlement Monitoring

a. At the direction of the Conrail Project Engineer, any activity that has the potential to disturb the railroad track structure will require the contractor to submit a detailed track settlement monitoring program for approval by the Conrail Project Engineer.

b. The program shall specify the survey locations, the distance between the location points, and frequency of monitoring before, during, and after construction. Conrail reserves the right to modify the survey locations and monitoring frequency as necessary during the project.

c. The survey data shall be collected in accordance with the approved frequency and immediately furnished to Conrail for analysis.

d. If any movement has occurred, notify the Conrail Project Engineer immediately. Conrail, in the exercise of its sole discretion, shall have the right to immediately require all contractor operations to cease and determine what corrective action is required. Any corrective action required by or performed by Conrail, including the monitoring of corrective action of the contractor, will be at project expense.

3.6 Vibration Monitoring

a. When performing pile driving or any other work causing ground vibration within one-hundred (100) feet of a Conrail Structure or Utilities, the following vibration monitoring, at a minimum, shall be in place.

b. Baseline measurements, taken the week before and after vibration inducing work occurs, must take into account any effect due to train traffic, including two trains on the bridge at the same time.

c. Vibration monitoring shall be performed continuously during active construction.

d. In person initial monitoring of the seismograph shall be required when the construction location or construction method changes.

e. Conrail shall be notified immediately upon any readings of Peak Particle Velocity ("PPV") above the threshold limit of 0.5 in/sec.

f. The seismograph data shall be provided to Conrail on a daily basis.

g. Ensure the seismographs used for monitoring are calibrated within twelve (12) months of monitoring activities.

h. A Response Action Plan, including proposed Response Action Levels and actions to be taken when measured vibration amplitudes exceeds specified Response Action Levels, shall be developed and submitted to Conrail for review and approval.

i. Pre-construction, construction phase, and post-construction facility inspections may be required for certain Conrail facilities.

4.0 SHEETING AND SHORING REQUIREMENTS

4.1 General

a. Design calculations and a complete construction procedure for all permanent and temporary shoring facilities are to be provided. All items listed on the Conrail Sheeting and Shoring Submittal Check List sheet are to be included in the Site Specific Work Plan (Appendix A-2).

b. Footings for all piers, columns, walls or other facilities shall be located and designed so that any temporary sheeting and shoring for support of adjacent track or tracks during construction shall not be closer than twelve (12) feet (3.66 m) from the centerline of the nearest track.

c. When excavation for construction of the above-mentioned facilities is within the theoretical railroad embankment line (*see* Appendix A-5), interlocking steel sheet piling, driven prior to excavation, must be used to protect track stability. The use of trench boxes or similar devices is not acceptable. Soldier piling and lagging will be considered for supporting adjacent track(s) only when its use is approved by Conrail. Consideration for the use of soldier piling and lagging shall be made if the required penetration of steel sheet piling cannot be obtained and when dry, non-running, stable material will be encountered.

d. Exploratory trenches, three (3) feet (0.9 m) deep and fifteen (15) inches (0.4 m) wide in the form of an "H" with outside dimensions matching the outside of sheeting dimensions are to be hand dug, prior to placing and driving steel sheeting, in areas where railroad underground installations are known to exist. These trenches are for exploratory purposes only and are to be backfilled with the backfill compacted immediately. This work must be performed in the presence of Conrail's representative.

e. A track outage is required while driving sheeting within twenty-five (25) feet (7.6 m) from centerline of a live track. The procedure for arranging the use of track shall be as outlined in Section 2.7 of these specifications.

f. Cavities adjacent to the sheet piling, created by the driving of sheet piling, shall be filled with clean sand and any disturbed ballast must be restored and tamped immediately.

g. Sheet piling shall be cut off at the top of tie during construction. After construction and backfilling has been completed, piling within ten (10) feet (3.0 m) of centerline of track, or when bottom of excavation is below a line extending on a 1:1 slope from end of tie to point of intersection with sheeting, shall be cut off eighteen (18) inches (0.5 m) below finished grade and left in place.

h. Any excavation adjacent to track shall be covered and ramped and provided with barricades as required by Conrail. A lighted walkway with a handrail must be provided adjacent to the track for any excavation within ten (10) feet (3.0 m) of the centerline.

i. Final backfilling of excavation shall be as required by project specifications.

j. The sponsor is to advise Conrail of the time schedule of each operation and obtain approval from Conrail for all work to be performed adjacent to Conrail tracks so that it may be properly supervised by railroad personnel.

k. Where physical conditions of design impose insurmountable restrictions requiring the placing of sheeting closer than as specified above, the matter must be submitted to Conrail for review and approval.

4.2 Loads

a. The sheeting shall be designed to support all lateral forces caused by the earth, railroad and other surcharge loads during all phases of construction.

b. The railroad loading to be applied is a Cooper E-80 loading. This loading consists of 80 kip (356 KN) axles spaced five (5) feet (1.5 m) on centers.

c. The lateral forces acting on the sheeting shall be computed as follows:

   1. The Rankine Theory shall be used to compute the active and passive earth pressures.

   2. The Boussinesq analysis shall be used to determine the lateral pressure caused by the railroad loading. The load on the track shall be taken as a strip load with a width equal to the length of the ties (8'-6" or 2.6 m). The vertical surcharge, q (psf), caused by each axle, shall be uniform and equal to the axle weight divided by the tie length and the axle spacing (5'-0" or 1.5 m). For a Cooper E-80 loading, this results in: q = 80,000 / (8.5 X 5) = 1882 psf (90.1 KPa).

   3. The horizontal pressure due to the live load surcharge at any point on the sheet piling wall is P_h and can be calculated by the following: $P_h = (2q/\pi)(\beta - \sin\beta \cos 2\alpha)$ (see Appendix A-5).

d. Calculated lateral forces on any shoring system member may not be reduced for any reason (including temporary nature of the installation or soil arching).

4.3 Allowable Stresses

a. The allowable stresses for the sheet piling and other steel members (wales, struts, etc.) shall be in accordance with AREMA Chapter 15, Part 1. These allowable stresses may be increased ten percent (10%) due to the temporary nature of the installations.

b. A factor of safety of at least 1.5 must be used for the embedment length of temporary sheeting (*i.e.*, multiply calculated embedment depth by 1.5).

4.4 Deflection Criteria

a. ½-inch (1.27 cm) maximum deflection for sheet piling located ten (10) feet (3.0 m) from centerline of the nearest track.

b. 1-inch (2.54 cm) maximum deflection for sheet piling located greater than 10 feet (3.0 m) feet from centerline of the nearest track.

c. Use K (at-rest earth pressure) for design of all braced and tie-back excavations.

4.5 Soldier Pile Systems (when determined acceptable by Conrail - see Section 4.1.c)

a. The effective width of soldier piles installed in cohesionless soils may be increased by an adjustment factor of 0.08 times the internal friction angle of the soil (0.08ø), but not greater than 2.00.

b. The effective width of soldier piles installed in cohesive soils may be increased by an adjustment factor ranging from 1.00 to 2.00 based on soil conditions.

c. Soil arching behind lagging may not be used in the design of the lagging members.

d. Openings or gaps (louvers) between horizontal joints of lagging member are not permitted.

e. Lagging shall be made of steel members.

f. Lagging members to be installed as excavation proceeds. Any voids created by the lagging installation must be completely backfilled with soil or grout before installing to the next level of lagging members.

g. Lagging must be removed as excavation is backfilled.

4.6 Testing of Soil/Rock Anchors

a. Where soil or rock anchors are used, all anchors must be tested. Testing shall be in accordance with industry standards with a minimum of ten percent (10%) of the anchors "Performance Tested" and all others "Proof Tested." Specifications for testing of the anchors are to be included on the shoring system drawings.

b. All tie-back anchor stresses are to be in accordance with AREMA Chapter 8, Part 20.5.7.

4.7 Material Specifications

A list of material specifications for all shoring system members shall be provided on the drawings (*i.e.*, ASTM Designation and Grade of steel sheet piling).

4.8 Installation and Removal of Shoring System

a. A complete procedure for the installation and removal of the shoring system shall be included on the drawings.

b. Drawings to show location and type of all equipment to be used for installation and removal of the shoring system. Information detailing the installation and removal shall be in accordance with Section 5.0 of this document.

4.9 Submissions

a. All drawings for temporary sheeting and shoring shall be prepared, stamped and signed by a Registered Professional Engineer, licensed in the State the installation will take place in, and shall be accompanied by complete design computations when submitted for approval.

b. A minimum of four (4) hard copies of the submission are to be sent to Conrail's Chief Engineer Design and Construction for review and approval.

c. One (1) complete set of the submission is to be sent to Conrail's Project Engineer for the project.

d. The sponsor is advised to expect a minimum forty-five (45) day review period from the day the submission is received by the Chief Engineer Design and Construction.

4.10 Inspection

Conrail's representative must be present at the site during the entire sheeting and shoring installation and removal, if applicable, procedure. The sponsor must notify the railroad

representative and finalize the work schedule at least seventy-two (72) hours in advance of the work. No changes will be accepted after that time.

4.11 Permanent Installations

Steel sheet piling may not be used as a permanent retaining structure.

5.0 ERECTION, HOISTING AND DEMOLITION REQUIREMENTS

5.1 General

a. A complete procedure for the demolition or erection operation is to be provided. All items listed on the Conrail Demolition and Erection Submittal Check List sheets are to be included in the Site Specific Work Plan (Appendix A-3 and A-4).

b. Plans and computations showing weight of picks must be submitted. Where beams are being removed over Conrail facilities, the weight shall include the weight of concrete or other material that will be included in each pick. Calculations shall be made from plans of the existing and/or proposed structure showing complete and sufficient details with supporting data for the demolition or erection of the structure.

c. "As built" drawings are to be provided for bridge demolition projects. If the sponsor can prove to Conrail that plans do not exist and weights must be calculated from field measurements, the field measurements are to be made under the supervision of a Registered Professional Engineer submitting the procedure and shall include sketches and estimated weight calculations with their procedure. If possible, field measurements shall be taken with a Conrail representative present. Weights shall include the weight of concrete or other material that will be included in the lifts.

d. A detailed staging plan with estimated durations for each operation will be required if the procedure involves either the cutting of steel or the bolting of joints which would affect Conrail operations.

e. A location plan showing all obstructions such as wires, poles, adjacent structures, etc., must be provided to show that the proposed lifts are clear of these obstructions.

f. Temporary support of any components (overhead or undergrade) or intermediate stages is to be shown and detailed. A guardrail (railroad) will be required to be installed in a track where a temporary bent is located within twelve (12) feet (3.7 m) from the centerline of that track.

g. A time schedule of the various stages must be shown as well as a schedule for the entire lifting procedure.

h. All bridge erection or demolition procedures submitted are to be prepared, signed and sealed by a Registered Professional Engineer licensed in the State the work will take place.

i. The name and experience of the employee supervising the operation must be supplied to Conrail.

5.2 Shielding and Catch Systems

a. Shielding shall be provided to protect Conrail property and personnel from falling debris during demolition operations. It shall extend the greater of the following distances:

   1. full width of railroad property
   2. a minimum of twenty-five (25) feet beyond centerline of outside track

b. All shielding shall be solid timber or other material as approved by Conrail. Netting is not acceptable to catch debris over railroad property. Any activites involving water, such as sawcutting, shall require a plastic covering to be laid over the shielding.

c. Vertical shielding at the fascia of bridge decks shall be of adequate height to prevent any debris from falling onto railroad property. Vertical shielding shall extend a minimum of two (2) feet above top of material being removed (parapet, bridge deck, *etc.*).

d. The maximum allowable depth of accumulated debris (*i.e.*, concrete) on the shielding shall be indicated on the drawings. Accumulated debris to be removed from the shielding as soon as possible and all debris must be removed from the shielding at the end of each work shift.

e. Horizontal shielding shall be designed for a live load of 50 pounds/sq.ft. (245 kgs./sq.m.) plus the weight of equipment, debris and all other loads to be supported.

f. Shielding shall be designed for a minimum wind load of 30 pounds/sq.ft. (245 kgs./sq. m).

g. For all overhead demolition, track protection will be required along the entire length of demolition and ten (10) feet beyond on either side of the demolition. Track protection (see Appendix A-9) is described as follows:

   1. Filter fabric shall be placed over the ties and all ballast

   2. Plywood shall be placed over the filter fabric and nailed to the ties

h. Where sawcutting operation is to be used, protect the rails as follows:

   1. Timber blocking shall be used to span plywood across rails, plywood shall be clear of the top of rail.

   2. Sawcutting in conjunction with the above-described rail protection is only to be used during track foul time or an outage provided by Conrail.

i. Shielding submittals must include drawings showing complete structural details of the shield, a written installation and removal procedure, location and type of equipment used to install/remove the shield and design calculations verifying the capacity of the shield.

j. Debris is to be placed, not dropped onto the shield.

5.3 Operations Using a Crane

a. A plan view drawing showing the location(s) of all crane(s), horizontally and vertically, operating radii, with material delivery locations or disposal locations, at each phase of construction, is to be provided. The location of all tracks and other railroad facilities are to be shown.

b. A complete crane manufacturer brochure of each crane to be used is to be provided. Crane charts, including crane model number, size of counterweight, and boom nomenclature are to be submitted. All pages of the brochure must be provided.

c. Crane rating sheets must show crane(s) are adequate to lift 150% of the actual pick weight, including crane hook and rigging components weight.

d. If beam clamps are used provide certification that they have been tested in accordance with manufacturer recommendations.

e. All crane lifts are to be performed with the crane set in a stationary position. A crane may not travel (walk) with a load. No part of crane shall be placed over any Conrail track or structure.

f. Details and a data sheet shall be prepared listing the type, size and arrangements of slings, shackles, or other connecting equipment. All pieces to be lifted are to be positively attached to the crane or rigging. Positive connections consist of some combination of screws, bolts, cables,

chains, straps, steel angles, and other steel hardware. Positive connections do not rely on the frictional resistance produced by the effects of gravity. Include copies of a catalog or information sheets for rigging components and specialized equipment.

g. A complete procedure is to be included, indicating the order of lifts and any repositioning or re-hitching of the crane or cranes.

h. The maximum length of girder to be lifted from a single point is 50 ft.

i. Beams are to be checked to ensure they will not fail under their own dead load during lifting operations.

j. A time schedule of the various stages must be shown as well as a schedule for the entire lifting procedure.

5.4 Bridge Jacking Procedures

a. Bridge Jacks, and any Temporary Supports that may be used, shall have a minimum capacity of 150% of the intended load.

b. Jacks shall not be used as temporary supports.

c. Any shim plates used shall be made of steel.

d. Truss Bridges must have jacks placed at panel intersection points.

5.5 Submissions

e. All drawings for demolition and erection procedures shall be prepared, stamped and signed by a Registered Professional Engineer and shall be accompanied by complete design computations when submitted for approval.

f. A minimum of four (4) copies of the submission are to be sent to Conrail's Chief Engineer Design and Construction for review and approval.

g. One (1) complete set of the submission is to be sent to Conrail's Project Engineer for the project.

h. The sponsor is advised to expect a minimum forty-five (45) day review period from the day the submission is received by the Chief Engineer Design and Construction.

5.5 Inspection

a. Conrail's representative must be present at the site during lifting operations. The sponsor must notify the railroad representative and finalize the work schedule at least seventy-two (72) hours in advance of the work. No changes will be accepted after that time.

6.0 REQUIREMENTS FOR DESIGN AND CONSTRUCTION OF OVERHEAD BRIDGES

6.1 General

a. Highway bridges with sidewalks shall have a parapet or parapet and fence at the bridge fascia. Top of parapet or fence to extend a minimum distance of 8'-0" above top of sidewalk surface.

b. Highway bridges without sidewalks shall have a parapet with a minimum height of 3'-6" above roadway surface.

6.2 Clearances

a. The minimum vertical clearance above the top of the higher rail shall be twenty-three (23) feet (7.0 m) at all times. In areas where the railroad has been electrified with a catenary wire, and

areas which are likely to be electrified, the minimum vertical clearance must be twenty-four (24) feet, six (6) inches (7.5 m) above the top of the higher rail.

b. The minimum horizontal clearance measured from the centerline of track to the near face of the obstruction must be twenty (20) feet (6.1 m) for tangent track and twenty-one (21) feet (6.4 m) for curves. *See* Conrail Standard Plan 48754-B, Appendix A-8.

c. Whenever practicable, bridge structures must have the piers and abutments located outside of the railroad right-of-way. All piers located less than twenty-five (25) feet (7.6 m) from the centerline of track require a pier protection (crash wall) designed in accordance with specifications outlined in the current AREMA manual.

d. All piers should be located so that they do not interfere with drainage ditches. Where special conditions make this impossible, an explanation of these conditions, along with proposed mitigation, must be submitted with the drainage plans for review by Conrail.

e. The permanent clearances should be correlated with the methods of construction so that temporary construction clearances will not be less than the minimum allowed.

f. Bridge structures shall provide sufficient lateral and vertical clearance for anticipated future tracks, changes in track centers and raising of tracks for maintenance purposes. The locations of these tracks shall be determined by inquiry to Conrail.

g. The profile of the top of rail should be examined to determine if the track is in a sag at the location of the bridge. If the track is in a sag, the vertical clearance from the track to the bridge should be increased sufficiently to allow raising the track to remove the sag.

h. Bridge design drawings must show location of all overhead and underground utilities located on the railroad right-of-way.

i. Vertical and horizontal clearances must be adjusted so that the existing sight distance to railroad signals is not reduced due to the new construction.

j. All proposed temporary clearances which are less than those listed above must be submitted to Conrail for review and must be approved by Conrail prior to final design.

k. Clearances are subject to the requirements of the State in which the construction takes place and must be approved by the State and Conrail if less than those prescribed by law.

6.3 Drainage

a. Maintaining the existing drainage and providing for future drainage improvements must be addressed during the bridge design process. Special attention is to be given to maintaining flow in existing railroad drainage ditches during construction.

b. Drainage plans must be included with the general plans submitted to Conrail for approval. These plans must include hydrologic and hydraulic studies and computations showing the frequency and duration of the design storm used, as well as the method of analysis such as Soil Conservation Service or the Rational method. Conrail uses storms with a 100-year recurrence interval as the minimum design storm.

c. Lateral clearances must provide sufficient space for construction of the required track ditch parallel to the standard roadbed section. If the ditch cannot be provided, or the pier will interfere with the ditch, then a culvert of sufficient size must be provided. *See* Conrail Standard Plans 48754-B and 48747, Appendix A-7 and A-8.

d. Ditches and culverts must be sized to accommodate all increased run-off due to the construction and the increased size must continue to the natural outlet of the ditch. Ditches

must be designed in accordance with good drainage engineering practices and must meet all local codes and ordinances.

e. No scuppers or other deck drains, roadway drainage, catch basins, inlets or outlets are permitted to drain onto Conrail Property. Any variation of this policy must have the prior approval of Conrail. If an exception is ultimately granted, maintenance of such must not be Conrail's. Drainage from scuppers and deck drains must be conveyed through pipes, preferably to a point which is off Conrail Property. If the drainage must be conveyed into a railroad ditch, calculations must be provided to Conrail, which indicate the ability of the ditch to carry the additional run-off.

f. Additional drainage may require the installation of pipe(s), construction of new ditch(s) or re-profiling of existing ditches.

6.4 Erosion Control

a. Embankment slopes on Conrail Property adjacent to the track must have a slope of 2:1 or less and be paved for a minimum of two (2) feet (0.6 m) beyond the outside edge of the bridge foundation structure. The purpose of the pavement is to minimize erosion of the embankment material and to reduce deterioration of the sub-grade material by drainage water. The pavement shall consist of a prepared sub-base and/or filter fabric with grouted rip-rap or cast-in-place concrete on the surface.

b. The general plans for the bridge should indicate the proposed methods of erosion control during construction and must specifically address means to prevent silt accumulation in ditches and culverts and to prevent fouling the track ballast and sub-ballast. If the plans do not show erosion control, the contractor must submit a proposed method of erosion control and must have this method approved by Conrail prior to beginning any grading on the site.

c. Existing track ditches must be maintained at all times throughout the construction period. After the construction has been completed, any erosion or siltation must be removed and the ditches must be restored.

d. Conrail's approval of drainage and erosion control plans will not relieve the sponsor from obtaining formal approval of the proposed design from the appropriate governmental agency having jurisdiction.

6.5 Submissions

a. Design drawings shall be submitted a minimum of three (3) times during the course of the project design. The submissions shall be as follows:

   1. **Type, Size and Location** - Drawings submitted at this time are to show the type of structure, span lengths, a typical bridge cross section, layout of the abutments and pier(s) in relation to the track(s) and Conrail Property lines. Drawings to show horizontal clearance from centerline track to bridge abutments and piers. Minimum vertical clearance from top of rail to bottom of bridge is to be shown.

   2. **60% Submission** - 60% complete drawings to be submitted. Preliminary project specifications/special provisions to be submitted at this time.

   3. **Final Submission** - These drawings and specifications/special provisions shall include all Conrail design requirements and address all the Conrail comments raised during the design phase of the project. The drawings and specifications/special provisions are to be the final contract documents.

b. The final drawings are to be signed, dated and sealed by a Professional Engineer licensed in the State the work will take place.

c. Property parcel drawings showing proposed surface lands and/or aerial easements required for construction of the new bridge are to be submitted to the Conrail Real Estate Department for review during the course of the project design.

APPENDICES

Sample Format for Written Site Specific Work Plan (SSWP) Narrative

I. Scope of Work
   a. Description
   b. Location

II. Work Schedule
   a. Planned Start Date
   b. Work Hours

Days:

Times:

   c. Duration

III. Work Procedure
   a. Summary
   b. Equipment
   c. Crew Size
   d. Communications
   e. Site Access

IV. Safety
   a. Specific Work Activity Safety Procedures
   b. Railroad Protection Procedures
   c. Emergency Contacts

Names and cell phone numbers

V. Staffing
   a. Supervision

Conrail Sheeting and Shoring Submittal Check List

Project Description: _____

- ☐ Calculations and drawings stamped by a Professional Engineer.
- ☐ Drawings are independent of the calculations (not included in the calculation sheets) and show all details including, wale and strut connections; type, size and length of welds.
- ☐ Drawings include a plan view, elevation and cross section(s). Track elevation and distance from centerline track to face of sheeting shown.
- ☐ Face of sheeting located a minimum of 12'-0" from centerline track (no closer than toe of ballast).
- ☐ Interlocked steel sheet piling specified/shown on the drawings.
- ☐ Prefabricated interlocked steel sheet piling corners specified at all corners.
- ☐ Specifications (i.e.: ASTM Designation and Grade) for all material used in the shoring system including, sheet piling; wales; struts; bolts and welds shown on the drawings.
- ☐ Detailed installation and removal procedure for the shoring system provided on the drawings.
- ☐ Cooper E-80 loading is used as the railroad design loading.
- ☐ All sides of the sheeting structure that fall within the theoretical railroad embankment line (1½ to 1 slope at 10' from centerline track) designed to meet Conrail criteria.
- ☐ The Boussinesq analysis is used to determine the lateral pressure caused by the railroad loading, as described in Conrail's CE-6 requirements.
- ☐ The Rankine Theory is used to calculate the active and passive earth pressures.
- ☐ The allowable stresses for the sheet piling and other steel members (wales, struts, etc.) are in accordance with AREMA Chapter 15, Part 1. The allowable stresses may be increased ten percent (10%) due to the temporary nature of the installations.
- ☐ Specifications for testing any earth or rock anchors. A minimum of ten percent (10%) of the anchors are "Performance Tested" and all others "Proof Tested".
- ☐ Barricades and lights protecting excavation specified/shown. Illuminated walkway with handrail when sheeting is within 12'-0" of centerline track.
- ☐ Sheeting and/or supports (wales, struts, etc.) do not conflict with permanent structure (abutment, pier, column, retaining wall, etc.).
- ☐ Deflection of sheet piling checked and included in the calculations.
- ☐ Complete crane information including, location; manufacturer and model; boom length; maximum operating radius; outrigger configuration; size of counterweight shown on the drawings.
- ☐ Catalog information for the sheet piling hammer. Weight of the hammer indicated.
- ☐ Complete crane chart information for the specified crane. Crane must be adequate to lift 150% of calculated pick weight. Pick weight calculations included.

Designer: _____ PE Stamp

Company: _____

Note: Any submission received without an accurately completed "Submittal Check List" will not be reviewed or returned.

All submissions to include a minimum of four (4) complete sets of drawings and calculations (two sets will be retained by Conrail) and are to be sent to:

Ryan Hill
Chief Engineer - Design and Construction
Conrail
330 Fellowship Rd, 3rd Floor
Mount Laurel, NJ 08054

Conrail Demolition Submittal Check List

Demolition procedure for any work over or adjacent to Conrail track(s)

Project Description: _____

- ☐ Calculations and drawings stamped by a Professional Engineer.
- ☐ Drawings are independent of the calculations (not included in the calculation sheets) and show all details including, a plan view, elevation, rigging and temporary supports/bracing.
- ☐ Plan and elevation views of all crane positions.
- ☐ Track(s) and all other railroad facilities shown in all elevation and plan views. Distance from centerline of track to closest point of any obstruction (crane, temporary support, etc.) shown.
- ☐ Disposal/lay down area shown on the drawings.
- ☐ Complete crane information shown on the drawings including, crane location(s); manufacturer and model number; boom length and radius for each pick; outrigger configuration and size of counterweight.
- ☐ Crane is shown in a stationary position. Lifting procedure does not include crane traveling (walking) with load. No part of crane shall be placed over any Conrail track or structure.
- ☐ All overhead and underground utilities shown on the drawings.
- ☐ Complete crane chart information for the crane specified on the drawings provided. Crane must be adequate to lift 150% of the actual pick weight.
- ☐ Pick weight calculations and supporting drawings provided.
- ☐ Weights are calculated from "as built" drawings for the entire structure.
- ☐ If "as built" drawings do not exist, weights calculated from field measurements. Field measurements made under the supervision of the Professional Engineer submitting the procedure. Sketches and estimated weight calculations provided for all picks.
- ☐ Drawings show a rigging arrangement detail for each pick including, diameter, length, size, sling angle and capacity of all equipment. Catalog data sheets for all shackles, slings, beam clamps and other connecting equipment provided. A minimum of 2 legs with positive connections are used for all rigging.
- ☐ Lift sequence shown on the drawings.
- ☐ Duration (length of time) for each stage provided on the drawings.
- ☐ Demolition shielding shown on the drawings. Shielding installation and removal procedure included.
- ☐ Demolition shield design calculations provided. Horizontal shielding designed for a live load of 50 pounds/sq.ft. plus the weight of all equipment, debris and all other loads to be carried.
- ☐ Beam/member stability calculations provided. All conditions considered including, beam on supports with reduced bracing (lateral support) and suspended in air supported by crane. All conditions analyzed including, unbraced length and wind loading.
- ☐ Details and sequence for installation of beam bracing (diaphragms, temporary supports, etc.) provided on the drawings.
- ☐ Acceptable method (filter fabric/plywood) for protecting track structure from dust and debris is shown on the drawings.
- ☐ Any reduction in horizontal or vertical clearance shown on the drawings.

Designer: _____ PE Stamp

Company: _____

Note: Any submission received without an accurately completed "Submittal Check List" will not be reviewed or returned.

All submissions to include a minimum of four (4) complete sets of drawings and calculations (two sets will be retained by Conrail) and are to be sent to:

Ryan Hill
Chief Engineer - Design and Construction
Conrail
330 Fellowship Rd, 3rd Floor
Mount Laurel, NJ 08054

Conrail Erection Submittal Check List

Erection procedure for any work over or adjacent to Conrail track(s)

Project Description: _____

- ☐ Calculations and drawings stamped by a Professional Engineer.
- ☐ Drawings are independent of the calculations (not included in the calculation sheets) and show all details including, a plan view, elevation, rigging and temporary supports/bracing.
- ☐ Track(s) and all other railroad facilities shown in all elevation and plan views. Distance from centerline of track to closest point of any obstruction (crane, temporary support, etc.) shown.
- ☐ Staging/unloading area shown on the drawings.
- ☐ Complete crane information shown on the drawings including, crane location(s); manufacturer and model number; boom length and radius for each pick; outrigger configuration and size of counterweight.
- ☐ Crane is shown in a stationary position. Lifting procedure does not include crane traveling (walking) with load. No part of crane shall be placed over any Conrail track or structure.
- ☐ All overhead and underground utilities shown on the drawings.
- ☐ Complete crane chart information for the crane specified on the drawings provided. Crane must be adequate to lift 150% of the actual pick weight.
- ☐ Pick weight calculations and supporting drawings provided.
- ☐ Drawings show a rigging arrangement detail for each pick including, diameter, length, size, sling angle and capacity of all equipment. Catalog data sheets for all shackles, slings, beam clamps and other connecting equipment provided. A minimum of 2 legs with positive connections are used for all rigging.
- ☐ Lift sequence shown on the drawings.
- ☐ Duration (length of time) for each stage provided on the drawings.
- ☐ Beam/member stability calculations provided. All conditions considered including, beam suspended in air and set on supports without lateral support. All conditions analyzed including, unbraced length and wind loading.
- ☐ Details and sequence for installation of beam bracing (diaphragms, temporary supports, etc.) provided on the drawings.
- ☐ Any reduction in horizontal or vertical clearance shown on the drawings.
- ☐ Design calculations and procedures for any jacking operations included.
- ☐ Catalog sheets for jacks or similar equipment provided.
- ☐ Drawings, calculations and catalog cut sheets for temporary form work / overhang brackets provided.
- ☐ Drawings and calculations for any false work / supports towers provided. Distance from centerline track to closest point of false work shown.

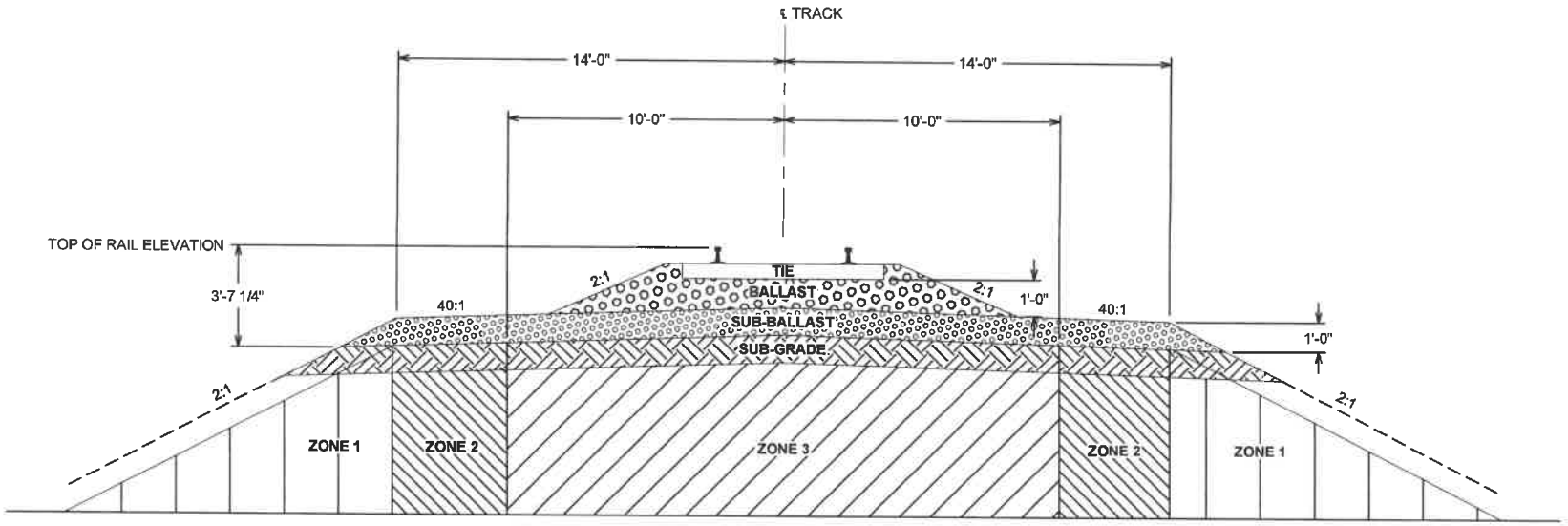
Designer: _____ PE Stamp

Company: _____

Note: Any submission received without an accurately completed "Submittal Check List" will not be reviewed or returned.

All submissions to include a minimum of four (4) complete sets of drawings and calculations (two sets will be retained by Conrail) and are to be sent to:

Ryan Hill
Chief Engineer - Design and Construction
Conrail
330 Fellowship Rd, 3rd Floor
Mount Laurel, NJ 08054



ROADBED PROFILE - SHORING REQUIREMENTS (NTS)

ZONE 1 EXCAVATION WITHIN ZONE 1 WILL REQUIRE SHORING FOR THE PROTECTION OF THE RAILROAD

ZONE 2 EXCAVATION WITHIN ZONE 2 WILL REQUIRE SHORING CONSISTING OF INTERLOCKING SHEETING FOR THE PROTECTION OF THE RAILROAD

ZONE 3 **NO EXCAVATIONS WILL BE ALLOWED IN ZONE 3**

NOTES:

1. EXCAVATIONS OUTSIDE OF ZONE 1 MAY REQUIRE SHORING FOR SAFETY. LATERAL PRESSURES DUE TO TRAIN LOADINGS DO NOT AFFECT SHORING DESIGN OUTSIDE OF ZONE 1.

REVISIONS		
DATE	LTR.	DESCRIPTION

CONRAIL

SHORING DESIGN GUIDE
SHORING REQUIREMENTS

REF. NO.: CE-8, Plate VIII

DATE: 3/4/2021 DRAWING NO.:

A - 5

Filename: C:\USERS\REICHMANND1\DESKTOP\CONRAIL\SHORING DESIGN GUIDE - SHORING REQUIREMENTS.DWG

LATERAL PRESSURES FROM COOPERS E-80 TRAIN LOADS

THE BOUSSINESQ EQUATION FOR STRIP LOADS IS SHOWN IN THE AREMA MANUAL FOR RAILWAY ENGINEERING, CHAPTER 8, SECTION 20.3.2.2

BOUSSINESQ EQUATION:

$PS = (2q/\pi) * (\beta-(SIN(\beta) * COS(2\alpha)))$

WHERE:

PS	=	ACTIVE PRESSURE FROM SURCHARGE LOADING
β	=	ATAN((CLT+TL/2) / HS) - ATAN((CLT-TL/2) / HS) IN RADIANS
α	=	β/2 + ATAN((CLT-TL/2) / HS) IN RADIANS
q	=	UNIFORM SURCHARGE LOAD FROM TRAINS = 80 KIPS/ (5) (TL)
CLT	=	DISTANCE FROM FACE OF RETAINING WALL TO CENTERLINE OF TRACK
TL	=	TIE LENGTH = 8.5' STANDARD
HS	=	DEPTH BELOW APPLIED SURCHARGE LOADING

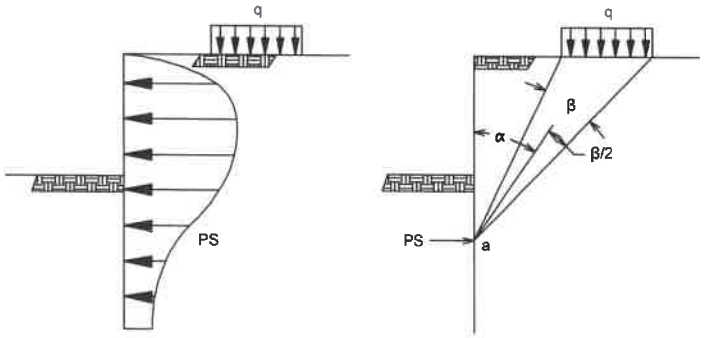
Table 1 - Lateral Pressure from E-80 Train Loads

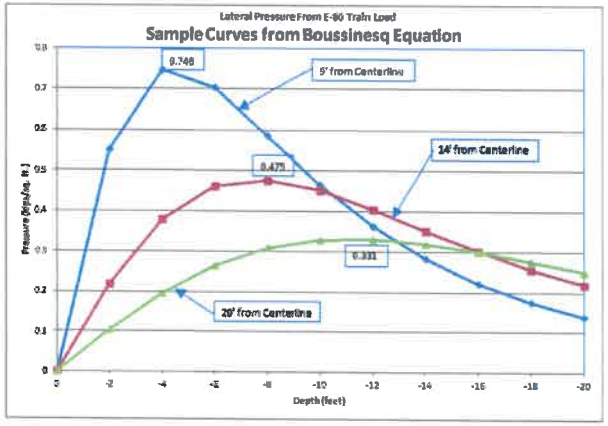
(From Boussinesq Equation)

"CLT" (Distance From Centerline of Track in Feet)	Depth (Feet) 0	-2	-4	-6	-8	-10	-12	-14	-16	-18	-20
8	0	0.7	0.846	0.732	0.576	0.439	0.333	0.258	0.195	0.152	0.12
9	0	0.55	0.766	0.703	0.585	0.464	0.363	0.283	0.221	0.175	0.139
10	0	0.44	0.65	0.699	0.579	0.478	0.385	0.307	0.245	0.196	0.158
11	0	0.36	0.565	0.608	0.561	0.482	0.99	0.326	0.265	0.215	0.176
12	0	0.301	0.492	0.536	0.536	0.477	0.406	0.339	0.281	0.232	0.192
14	0	0.218	0.378	0.46	0.475	0.45	0.404	0.352	0.302	0.257	0.218
16	0	0.165	0.297	0.38	0.413	0.411	0.386	0.35	0.311	0.272	0.236
18	0	0.13	0.239	0.315	0.357	0.369	0.36	0.338	0.309	0.278	0.247
20	0	0.104	0.196	0.265	0.309	0.329	0.331	0.319	0.3	0.276	0.251
23	0	0.078	0.15	0.208	0.25	0.276	0.287	0.287	0.279	0.265	0.247
26	0	0.061	0.118	0.166	0.205	0.232	0.248	0.255	0.254	0.247	0.237
29	0	0.049	0.095	0.136	0.17	0.196	0.214	0.224	0.228	0.227	0.222
32	0	0.04	0.078	0.113	0.143	0.167	0.185	0.197	0.205	0.207	0.206
35	0	0.034	0.066	0.095	0.122	0.144	0.161	0.174	0.183	0.188	0.189
39	0	0.027	0.053	0.078	0.1	0.119	0.135	0.148	0.158	0.164	0.168
43	0	0.022	0.044	0.064	0.083	0.1	0.115	0.127	0.137	0.144	0.149
47	0	0.019	0.037	0.054	0.07	0.085	0.098	0.11	0.119	0.127	0.133
51	0	0.016	0.031	0.046	0.06	0.073	0.085	0.095	0.104	0.112	0.118
55	0	0.014	0.027	0.04	0.052	0.063	0.074	0.084	0.092	0.099	0.105

All pressures shown are in kips per sq. ft.

Boxed values represent the maximum pressure ordinate for each value of "CLT".





NOTES:

1. TABLE 1 PROVIDES THE RESULTANT LATERAL PRESSURES FOR VARIOUS DEPTHS AND DISTANCES FROM THE CENTERLINE OF TRACK. THREE REPRESENTATIVE PRESSURE CURVES ARE ALSO SHOWN ON THE PROVIDED SAMPLE CURVES FROM BOUSSINESQ EQUATION.

2. FOR A SIMPLIFIED ENGINEERING ANALYSIS, THE RAILROAD LOADING SURCHARGE PRESSURE MAY BE ASSUMED RECTANGULAR WITH WIDTH (P) EQUAL TO 0.8 OF THE MAXIMUM PRESSURE ORDINATE AS GIVEN BY THE APPROPRIATE RAILROAD CURVE.

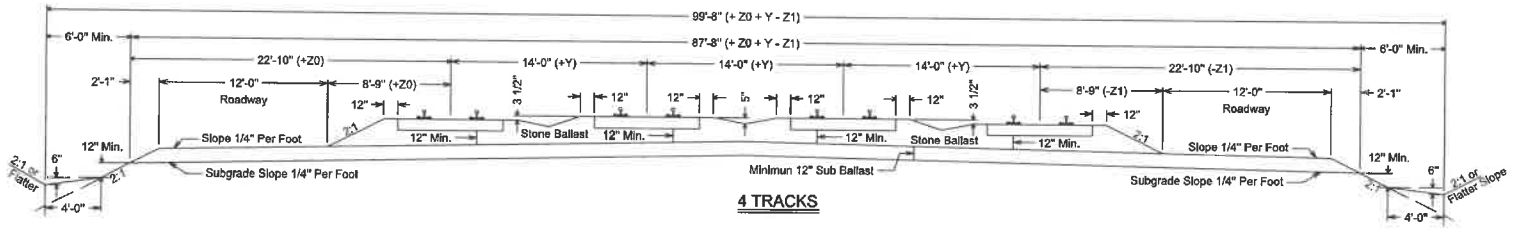
REVISIONS		
DATE	LTR.	DESCRIPTION

CONRAIL

SHORING DESIGN GUIDE
LATERAL PRESSURES FROM TRAIN LOADS

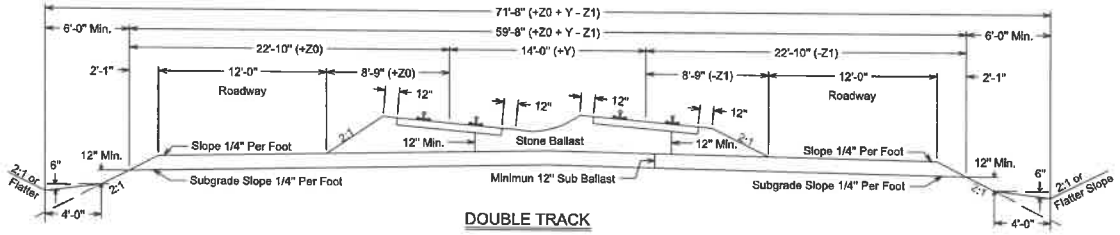
REF. NO.: CE-8, Plate IX

DATE: 3/4/2021 DRAWING NO.:

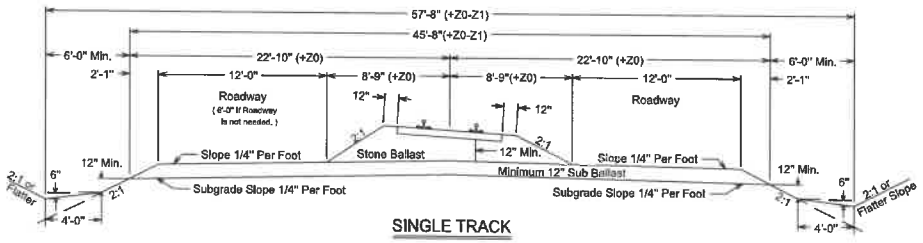


4 TRACKS

Note: Z0 and Z1 are indicated for tracks which curve to the right.



DOUBLE TRACK



SINGLE TRACK

Y DIMENSION

On adjacent tracks where the super-elevation is the same or the outer track has less, Y=2" per degree of curve.

Where super-elevation is greater on the outer track, Y=2" per degree of curve added to 3 1/2 times the amount of difference in super-elevation.

Z Dimensions 2 or More Tracks

Super - Elevation	Z0 - Outside of Curve	Z1 - Inside of Curve
0"	0"	0"
1"	4"	1"
2"	7"	5"
3"	10"	6"
4"	1'-1"	7"
5"	1'-4"	8"
6"	1'-7"	10"

Z Dimensions Single Track

Super - Elevation	Z0 - Outside of Curve	Z1 - Inside of Curve
0"	0"	0"
1"	2"	2"
2"	5"	4"
3"	8"	5"
4"	11"	6"
5"	1'-3"	7"
6"	1'-6"	9"

CONRAIL

48747

TYPICAL
ROADBED AND BALLAST SECTIONS

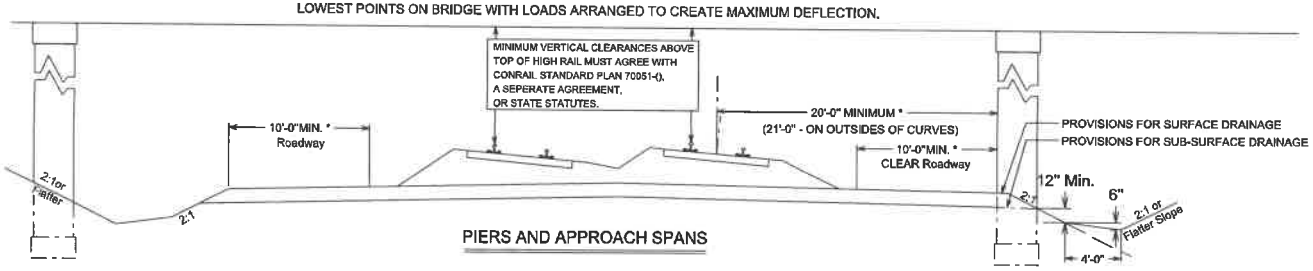
SEPTEMBER, 2018

CHIEF ENGINEER D&C

A - 7

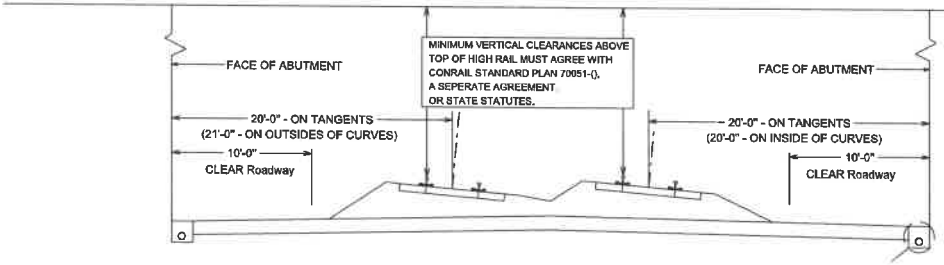
RAIN WATER RUNOFF MUST NOT BE DEPOSITED ONTO THE RAILDROAD RIGHT OF WAY.
DECK DRAINS AND SCUPPERS ARE PROHIBITED BETWEEN THE TRACK DITCHES.

LOWEST POINTS ON BRIDGE WITH LOADS ARRANGED TO CREATE MAXIMUM DEFLECTION.



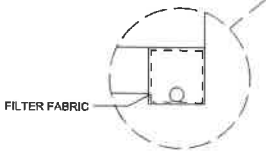
PIERS AND APPROACH SPANS

RAIN WATER RUNOFF MUST NOT BE DEPOSITED ONTO THE RAILROAD RIGHT OF WAY.
DECK DRAINS AND SCUPPERS ARE PROHIBITED BETWEEN THE TRACK DITCHES.
LOWEST POINTS ON BRIDGE WITH LOADS ARRANGED TO CREATE MAXIMUM DEFLECTION.



ABUTMENTS

DRAINAGE PIPE - 24" MINIMUM DIAMETER



18" x 18" DRAINAGE AREA WITH OPEN GRADED STONE AND 6" DIA. PERFORATED PIPE SLOPED TO DRAIN, (WITH FILTER FABRIC WHEN REQUIRED).

DRAINAGE PIPE - 24" MINIMUM DIAMETER PIPES SHOULD BE PROVIDED ON BOTH SIDES TO PERMIT CONTINUITY OF ROADBED DITCHES.

All side slopes through the bridge area must be coveered with rip-rap.

Ditches and slopes through the bridge area must meet the existing drainage facilities and match or exceed them in hydraulic capacity.

Piers located less than 25 feet from the centerline of any track must be protected by crash walls in accordance with the specifications in Chapter 8, Part 2.1.5 of the A.R.E.A manual for railway engineering.

* - Lateral clearances marked "*" may be reduced by 2 feet if a roadway is not required.

Additional clearance may be required to accomodate communication and signal pole lines, or as other field conditions require.

Flat bottom ditches as shown are to be used. "v" bottom ditches are permited only in conjuction with a drainage pipe. The pipe must have at least 4 feet of cover, or be at an elevation meeting the existing ditches, and must be at least 24" diameter

The ditch section shown is the minimum acceptable section. Ditch size must be increased when necessary as determined by hydrologic and hydraulic studies, or if the drainage pattern is altered by construction.

CONRAIL

48754-B

OVERHEAD BRIDGE MINIMUM CLEARANCE DIAGRAM

SEPTEMBER, 2018

CHIEF ENGINEER D&C

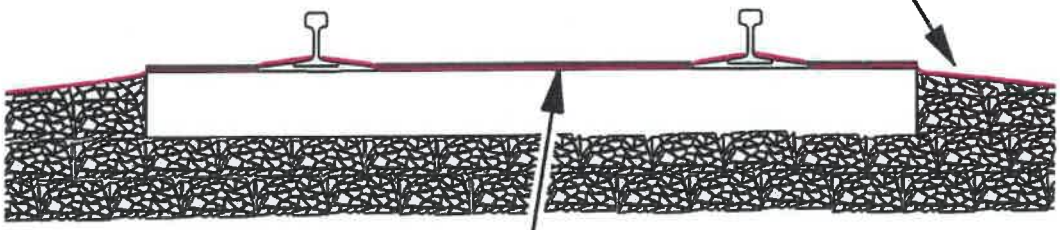
A - 8

TRACK PROTECTION TO BE IN PLACE AT ALL TIMES DURING DEMOLITION

PLYWOOD

FILTER FABRIC

EXTEND FABRIC OVER BALLAST



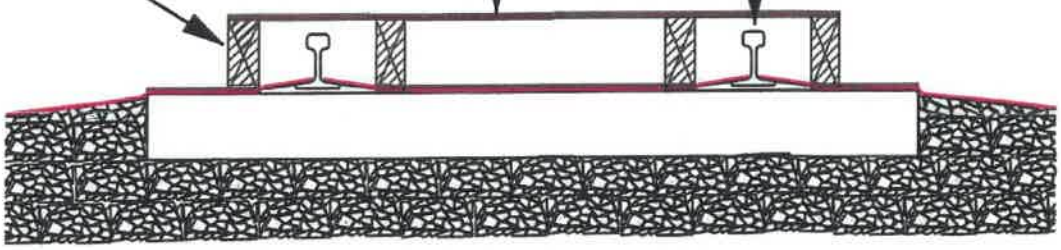
FILTER FABRIC UNDER PLYWOOD NAILED TO TIES

RAIL PROTECTION REQUIRED DURING SAWCUTTING OPERATION

TIMBER BLOCKING (TYP.)

PLYWOOD

PLYWOOD TO BE CLEAR OF TOP OF RAIL



THIS PROTECTION IS TO ONLY BE IN PLACE DURING TRACK FOUL TIME/OUTAGE PROVIDED BY CONRAIL

EXCAVATED MATERIAL AND GROUNDWATER MANAGEMENT PLAN EXAMPLE

Date

Prepared at the Request of: Consolidated Rail

Corporation
Mt. Laurel, NJ

TABLE OF CONTENTS

FIGURES

APPENDICES

1.0 INTRODUCTION

_____prepared this Excavated Material and Groundwater Management Plan (the Plan) to address planned construction activities associated with the _____on Consolidated Rail Corporation (Conrail) right-of-way (ROW) in _____ NJ. This Plan contains project-specific procedures for the planned construction activities and was prepared at the request of Conrail prior to the issuance of excavation permits along its ROW.

The purpose of the Plan is to provide general guidance for the field screening, classification, and proper handling of soil and/or groundwater encountered during the field work. The guidelines outlined herein were developed to ensure the materials are properly managed for use as backfill, off-site disposal or recycling, or decanting (as appropriate) based on observations and screening conducted during the construction activities.

2.0 PROJECT DESCRIPTION

_____ and their contractors will mobilize to the site and complete the following:

Complete the one call mark out.

Material, equipment or supplies requiring staging overnight or for longer durations will be located in an area approved by the Conrail Project Engineer, and will be staged only for so long as determined to be reasonably necessary by both _____ and the Conrail Project Engineer. Every attempt will be made to conduct work outside the fouling limit along Conrail's tracks. No staging of equipment or excavated materials will occur within the fouling limit or in access roads, except with the specific approval of Conrail's Project Engineer and only for so long as determined to be reasonably necessary by both _____ and the Conrail Project Engineer. The fouling limit of the track is fifteen (15) feet from the closest rail. Work in close proximity to Conrail track will be conducted in close coordination with Conrail Engineering Department representatives and the flagman assigned to the project. _____will not foul track without appropriate track protection in place arranged in advance with Conrail and in accordance with Conrail and Federal Railroad Administration (FRA) requirements.

3.0 PROJECT APPROACH

_____ and their contractors will _____

3.1 Project Background

3.2 Health and Safety

_____personnel and its contractors will have the required training for the planned work. This may include Occupational Safety and Hazard Administration (OSHA) Hazwoper training in accordance with 29 CFR 1910. FRA On-Track Worker Safety Training will be provided to workers as appropriate for their tasks and compliance with FRA regulations. Conrail specific training will also be required for workers. This training is to be coordinated with the Conrail project engineer.

A Daily Work Permit or equivalent will be completed and a Job Safety Hazard Analysis be performed for each excavation/ work site. In addition, daily tailgate meetings shall be performed before the start of each work day to address specific health and safety concerns. Air monitoring will be the responsibility of _____ personnel to evaluate the potential for organic vapors, hydrogen sulfide, unacceptable oxygen levels, and explosive atmospheres prior to excavation entry or hot work. Excavation areas will be allowed to vent and/or be evacuated with air movers until acceptable excavation action levels are attained.

Excavations will be shored or sloped, as necessary, in accordance with OSHA regulations and Conrail construction specifications for both worker safety and protection of the surrounding utilities or structures. Trained and experienced excavation equipment operators will be used to complete the work. Hand excavation will be completed, as necessary, to minimize the potential for injury to site workers and/or damage to the pipeline, adjacent track structure, or adjacent utilities. Open excavation areas will be surrounded with orange safety fence throughout the construction activities to alert vehicular traffic along the ROW and to secure the area from third party trespassers at the end of each day. Flagman or watchman will be stationed where and when necessary as determined in coordination with Conrail. Contingent upon the excavation depths, ladders will be staged along the excavation sidewalls and tied off in accordance with OSHA requirements.

3.3 Soil Observation, Screening and Classification

Field personnel will use visual observation, olfactory senses, and potentially photoionization detector (PID) readings as indicators of the potential presence of soil/material that is not suitable for use as backfill or a release of petroleum constituents. Examples of the initial indicators that may warrant further evaluation include the following:

Visual

- An oily, tar-like or stained appearance or sheen on the surface of the material.
- Debris or waste in form of wooden pallets, bags of plastic, paper, metal, etc.
- An oily sheen or free product floating on ponded water in the excavation.
- The presence of drums or other waste containers.

- The presence of seeping petroleum, sludge or other contaminated aqueous material from the excavation sidewall.

Olfactory

- The soil or water may have a sulfur (rotten egg), petroleum or chemical odor.
- A petroleum odor coupled with visual confirmation of oil, or stained or tar-like appearance. Soil or water with chemical odor may not exhibit visual signs of impacts.

PID Readings

- A PID will be used to field screen for volatile organic compound (VOC) vapors in soil, debris, waste and water encountered during the pipeline excavation.
- In conjunction with the visual and olfactory observations, PID readings will be evaluated to make determinations with regard to the proper management of excavated material and water generated during the excavation activities.

Based on field observations, soil screening results, and site conditions, to the extent reasonably possible, excavated soil/material will be classified as one of the following:

- No environmental concerns – material suitable for backfill;
- No environmental concerns – material not suitable as backfill due to non-environmental issues, e.g. trash and debris;
- Potential environmental concerns – not suitable as backfill.

The appropriate material, soil and/or water handling and management decision processes will be initiated as described in the following section.

3.4 Soil Handling and Management

Regardless of the classification of the excavated material, soil excavated will be staged on plastic at a designated area within the approved workspace and covered by plastic at the end of each work day or stored in a covered roll-off container. The stockpile location will typically be near the excavation in the swing zone of the excavating equipment, if practical and if permitted by Conrail's Project Engineer. Prior to transfer to the stockpile, excavated material will be allowed to drain of any free liquid over the excavation trench. Soil erosion and sediment control best management practices (e.g., silt fence and hay bales) will be used and maintained, as necessary, to secure the work area and soil stockpile. Based on the classification of the material, the following additional handling and management procedures will be employed. Regardless of the classification that applies to particular excavated materials, _____ shall promptly make that determination and promptly move any such soils off-site or use it as backfill in accordance with this Section.

3.4.1 No Environmental Concern, Suitable Backfill

If field observations and screening indicate the stockpiled soil is not impacted and is of sufficient engineering quality to be used as backfill, it will be returned to the excavation as backfill and compacted in the reverse order of excavation (last out, first in).

3.4.2 No Environmental Concern, Unsuitable Backfill

In the event that field observations and screening indicate that excavated material has no environmental impacts, but contains debris or material unsuitable for backfill, the debris (i.e., wooden pallets, plastic, paper, etc.) will be segregated into a separate pile, staged on and covered by plastic, and transported off site for disposal. The use of a roll-off box or direct load into a truck for off-site transport will be field determined in conjunction with Conrail's Project Engineer, based on site access and the volume and nature of the material. No excavation debris will remain along the Conrail ROW. The other stockpiled material may be used as backfill, as detailed in Section 3.4.1. _____ will manage the disposal of, and pay all fees associated with, any material identified for off-site disposal consistent with this section.

3.4.3 Potential Environmental Concerns, Unsuitable Backfill

If field observations and screening indicate a current or historical release or discharge related to operations adjacent to Conrail's tracks, the material will be staged on plastic and covered by plastic and surrounded by hay bales or stored in covered roll-off boxes pending classification for off-site recycling or disposal at a New Jersey Department of Environmental Protection (NJDEP)-approved facility or a United States Environmental Protection Agency (USEPA)-approved facility, if the former is inapplicable. The use of a lined roll-off box or direct load into a truck for off-site transport will be field determined in conjunction with Conrail's Project Engineer based on site access and the volume of the material excavated.

The NJDEP Hotline and Conrail will immediately be notified. The Company will retain a qualified environmental firm to evaluate the nature and extent of such impacts in accordance with New Jersey regulations. With consideration of the safety guidelines outlined in Section 3.2 and standard work practices, the work will be completed, and the excavation will be backfilled with certified clean fill (see Section 3.7).

_____ will confer with Conrail regarding the appropriate manner for proceeding with remediation of the area of concern (AOC) in order to achieve applicable remediation standards and to ensure that Conrail is not adversely impacted by the selected remedy. _____ will manage the disposal of, and pay all fees associated with, any material identified for off-site disposal consistent with this section.

3.5 Construction Dewatering/Water Management

Groundwater infiltrating into the planned excavations will be field screened by _____ during construction dewatering. Dewatering by _____ will in all cases comply with New Jersey's permitting requirements and may include surface discharge or discharge to groundwater consistent with such requirements. _____ will secure all permits and assume responsibility for compliance. If field screening and observations indicate the water is suitable for discharge, it will be conveyed away from the excavation and discharged through a silt bag. The discharge

area will include hay bales for energy dissipation. Consistent with BMPs, the water will be discharged along the easement in the Conrail ROW but will not be discharged onto the Conrail roadbed or track structure. _____ will manage the discharged groundwater to prevent direct runoff into a water body or residential property.

If a sheen or petroleum product is observed on the water, or the water is otherwise impacted or has been in contact with impacted media, _____ will use a vacuum truck or a pump hosed to a frac tank in the staging area, to dewater the excavation. The water removed from the excavation, and will be disposed at a permitted recycling facility. _____ will be responsible for management and fees associated with water treatment and/ or disposal. Manifesting for off-site disposal of dewatering materials and the selection of the off-site disposal facility will be in accordance with the applicable provisions of Sections 3.4.3, hereof.

3.6 Conrail and NJDEP Notifications

In the event that environmental concerns are identified during the construction activities, _____ will contact Conrail to confer on an appropriate course of action and path forward.

If through field screening and observation it appears that environmental concerns are a result of a release of petroleum to the environment by _____ or from the property of _____, or any discharge of hazardous substances related to the construction, operation and/or maintenance activities of _____, the NJDEP will be notified immediately.

3.7 Site Restoration and Backfill Requirements

Based on the field observations and screening, excavated material and/or clean certified fill material will be placed in the excavation and properly compacted to grade. In areas critical to the stability of Conrail structures backfill and compaction will be in accordance with Conrail's CE-8 Specifications (Section 5.1.2) with the exception that the existing excavated material may be used for fill in lieu of crushed stone. Stone or topsoil will be placed over the excavation to restore the area to the pre-work conditions. Areas outside of the Theoretical Railroad Embankment Line will be backfilled and compacted as follows: The backfill under, around, and to a point 6 inches above the top of the pipe or casing shall be of loose earth, free of clods or rocks, and shall be placed in mechanically compacted layers not to exceed 6 inches in thickness. Each succeeding layer, to a point 12 inches below the normal road surface, shall be placed in 6" layers, each layer being thoroughly compacted and watered if necessary. On graded dirt roads, the top 12 inches of backfill shall be well-graded crushed rock or gravel mix. If appropriate, seed and straw and/or seed mats will be placed over the work area to minimize erosion. Soil erosion and sediment control structures (i.e., silt fence) will be temporarily installed (and subsequently removed), as necessary to minimize soil erosion and stabilize the work zone during the restoration period.

A clean fill certification (See e.g. Appendix A) will be obtained from the supplier for imported fill material. Decontaminated or recycled soil will not be used on Conrail property.

3.8 Disposal

_____ will, at its own cost, properly transport and dispose/recycle trash, debris, material unsuitable for re-use as fill or impacted soils or waste generated through the work or remediation of an AOC in accordance with the applicable provisions of this Plan. Properly licensed and permitted waste haulers will be used. All federal, state, and local rules and regulations will be adhered to including county solid waste flow control rules. _____ will be responsible for obtaining all waste acceptance and approval for disposal, and will be the generator of record for all waste. _____ will coordinate for the disposal of these materials, in accordance with Conrail's waste management program, through a designated Conrail representative familiar with that program. _____ shall use appropriately licensed disposal facilities, approved by Conrail, for off-site disposal. To the extent Conrail has an approved list of disposal facilities, it shall provide such list fourteen (14) days in advance of the commencement of excavation work.

In addition, _____ will be responsible for performing the required waste sampling, and will obtain all the required paperwork for shipment of waste material including the bill-of-lading or manifest, except as provided for above. _____ will provide Conrail copies of all waste characterization data and shipping records upon request.

3.9 NJDEP Permitting Authority

FIGURES

APPENDIX A

CLEAN FILL CERTIFICATION BOILERPLATE

Consolidated Rail Corporation

Clean Fill Material Certification Form

1. Project Name and Location: _____

   Street Address _____ County _____

   City or Town _____ State _____ Zip Code _____

   Project Contact Name _____ Phone Number _____

2. Clean Fill Supplier Name and Address: _____

   Street Address _____ County _____

   City or Town _____ State _____ Zip Code _____

   Contact Name _____ Phone Number _____

3. Clean Fill Material Source/Site Description/Location: _____

   _____

   _____

   _____

   Street Address _____ County _____

   City or Town _____ State _____ Zip Code _____

   Contact Name _____ Phone Number _____

4. Estimated Volume Required and Describe Use:_____

5. Proposed Clean Fill Must Meet CONRAIL Specification*. Existing Source and/or Analytical Performed/ Results Attached, if required:
   Clean Crushed Stone with Certification (Y___N___)
   Existing Certified Soil Fill Source with Certification (Y___ N___) and/or
   Clean Soil Source with Supporting Data (Y___N___)
   Additional Information_____

6. Number and Location of Samples Collected/Method of Sampling/Date of Sampling, if required:

   _____

I hereby certify that information provided herein is true and accurate and that it accurately represents the backfill material intended for shipment to the above described site. I further certify that the backfill material being provided from the above-identified fill source constitutes clean fill*. I further certify that the samples obtained and described above and attached to the form were collected by personnel trained and experienced in environmental sampling and sample management.

I AM FULLY AUTHORIZED TO MAKE THESE CERTIFICATIONS AND WARRANTIES.

Name: _____ Title/Company _____

Address: _____ Phone Number: _____

Signature _____ Date _____

Attachements:

1) Copy of Existing Certification and/or Chemical Analysis Results Compared to Residential Standards
2) Sampling Diagram

* ACCEPTABLE TYPES of FILL

1. Clean Crushed Stone (strongly preferred by CONRAIL) or,
   - Clean crushed stone is virgin quarried crushed stone with a certification as such from the quarry.
2. Conrail Approved Clean Soil (Including Topsoil)

•Requires Confirmation that the material being used meets the individual state's policy requirement for clean fill AND the state's residential/unrestricted use soil quality standards. The state in which the fill is being placed is the State requirement that needs to be met. This may include;

- Clean virgin soil from a borrow source that carries an existing certification from the source to meet the above clean fill requirement.
- Analytical data from representative samples demonstrating compliance with the state's residential / unrestricted use standards.
- If a borrow source is lacking a certification, CONRAIL may accept that source as clean via representative laboratory testing of the soil to be used that includes the following analyses: Volatile and Semi-Volatile Organic Compounds (VOC and SVOC) by EPA Methods 8260 and 8270; PCBs by EPA Method 8082; and analyses for RCRA Metals by Method 6010, adding Mercury by Method 7471).
- Structural fill will include additional requirements for engineering specification and placement.
- CONRAIL will not accept any re-used (off-site source), recycled, or decontaminated materials for backfill.

GENERAL INSTRUCTIONS

CLEARANCE REQUIREMENTS SHOWN ON THIS PLAN APPLY ONLY TO NEW CONSTRUCTION OR RECONSTRUCTION. EXISTING STRUCTURES AND TRACKS MAY BE MAINTAINED AND EXTENDED AT PRESENT CLEARANCES, UNLESS OTHERWISE REQUIRED BY LOCAL OR STATE AUTHORITIES.

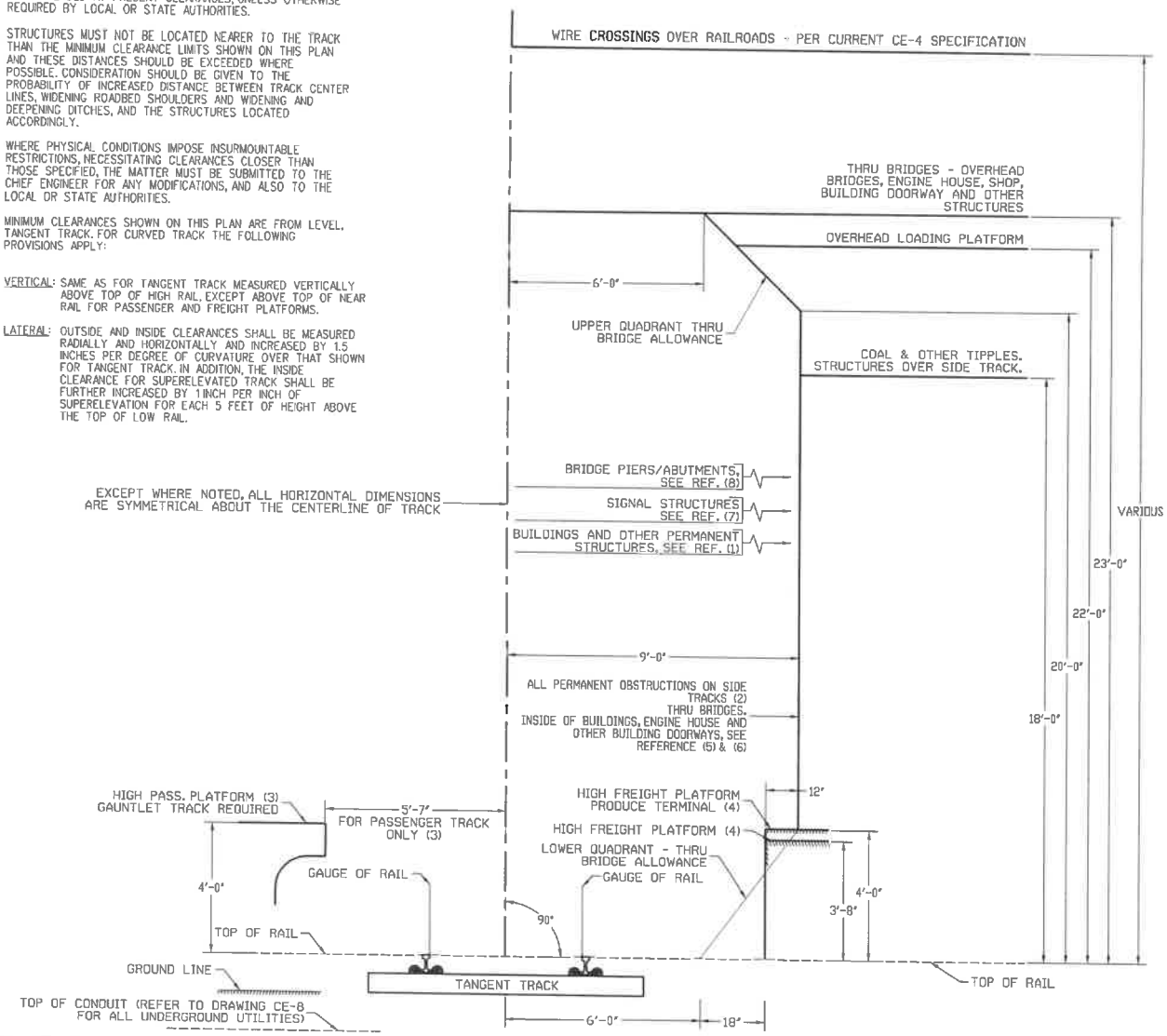
STRUCTURES MUST NOT BE LOCATED NEARER TO THE TRACK THAN THE MINIMUM CLEARANCE LIMITS SHOWN ON THIS PLAN AND THESE DISTANCES SHOULD BE EXCEEDED WHERE POSSIBLE. CONSIDERATION SHOULD BE GIVEN TO THE PROBABILITY OF INCREASED DISTANCE BETWEEN TRACK CENTER LINES, WIDENING ROADBED SHOULDERS AND WIDENING AND DEEPENING DITCHES, AND THE STRUCTURES LOCATED ACCORDINGLY.

WHERE PHYSICAL CONDITIONS IMPOSE INSURMOUNTABLE RESTRICTIONS, NECESSITATING CLEARANCES CLOSER THAN THOSE SPECIFIED, THE MATTER MUST BE SUBMITTED TO THE CHIEF ENGINEER FOR ANY MODIFICATIONS, AND ALSO TO THE LOCAL OR STATE AUTHORITIES.

MINIMUM CLEARANCES SHOWN ON THIS PLAN ARE FROM LEVEL, TANGENT TRACK. FOR CURVED TRACK THE FOLLOWING PROVISIONS APPLY:

VERTICAL: SAME AS FOR TANGENT TRACK MEASURED VERTICALLY ABOVE TOP OF HIGH RAIL, EXCEPT ABOVE TOP OF NEAR RAIL FOR PASSENGER AND FREIGHT PLATFORMS.

LATERAL: OUTSIDE AND INSIDE CLEARANCES SHALL BE MEASURED RADIALLY AND HORIZONTALLY AND INCREASED BY 1.5 INCHES PER DEGREE OF CURVATURE OVER THAT SHOWN FOR TANGENT TRACK. IN ADDITION, THE INSIDE CLEARANCE FOR SUPERELEVATED TRACK SHALL BE FURTHER INCREASED BY 1 INCH PER INCH OF SUPERELEVATION FOR EACH 5 FEET OF HEIGHT ABOVE THE TOP OF LOW RAIL.



REFERENCES

(1) – ON MAIN RUNNING TRACKS, WHERE PRACTICABLE, A LATERAL CLEARANCE OF 18'-0" INSTEAD OF 16'-0" IS DESIRED TO BUILDINGS AND OTHER PERMANENT STRUCTURES.

(2) – ON PRIVATE SIDE TRACKS, THE STANDARD CLEARANCE TO PLATFORMS OF 9'-0" IS TO BE OBTAINED IF POSSIBLE. WHERE THE INDUSTRY DEMANDS A LESS THAN STANDARD CLEARANCE FOR PLATFORMS, A MINIMUM OF 7'-6" FROM CENTER LINE OF TRACK MAY BE USED SUBJECT TO STATE APPROVAL WHERE REQUIRED, ON ONE SIDE OF SUCH TRACKS ONLY, PROVIDED A FULL 9'-0" CLEARANCE IS MAINTAINED ON THE OPPOSITE SIDE OF TRACK, OR TRACK CENTERS TO ADJACENT TRACKS ARE NOT LESS THAN 14'-0". REDUCED CLEARANCES ON PRIVATE SIDINGS ARE PERMISSIBLE ONLY WITH APPROVAL FROM CONRAIL'S CHIEF ENGINEER, AND WHERE INDUSTRY WILL ERECT AND MAINTAIN CLOSE CLEARANCE SIGNS ILLUMINATED AT NIGHT.

(3) – UNLESS AUTHORIZED BY THE CHIEF ENGINEER - MAINTENANCE OF WAY, HIGH PASSENGER PLATFORMS MUST NOT BE CONSTRUCTED ON TRACK HAVING CURVATURE IN EXCESS OF 1° 40' OR WHERE SPEED REQUIRES ELEVATION OF OUTER RAIL IN EXCESS OF 1". HIGH-LEVEL PLATFORMS WILL NOT BE CONSTRUCTED ADJACENT TO ANY FREIGHT-ONLY TRACKS OR FREIGHT/PASSENGER JOINT TRACKS WITHOUT APPROVAL FROM THE CHIEF ENGINEER. A GAUNTLET TRACK, FOR FREIGHT OPERATIONS, IS REQUIRED FOR HIGH-LEVEL PASSENGER PLATFORMS.

(4) – SAFETY LINES, YELLOW OR WHITE, 8'-6" FROM CENTER LINE OF TRACK ARE REQUIRED ON FREIGHT PLATFORMS.

(5) – FOR SIDE CLEARANCE TO HANDRAILS ON BRIDGES, TRESTLES AND TURNTABLES, SEE STANDARD PLAN CE-12 AND STANDARD BRIDGE DRAWINGS.

(6) –

STATE CLEARANCE REQUIREMENTS
OF VARIANCE WITH DIMENSIONS SHOWN ON THIS PLAN

	GENERAL CLEARANCES		INSIDE BLDGS.&DOORWAYS	
	HORIZONTAL	VERTICAL	HORIZONTAL	VERTICAL
MICHIGAN	8'-6"	22'-6"	8'-6"	22'-6"
NEW JERSEY; DELAWARE;	NO REGULATIONS - USE CONRAIL DIMENSIONS			
PENNSYLVANIA	12'-0"	22'-0"	8'-0"	18'-0"
NEW YORK	8'-6"	22'-0"	8'-0"	18'-0"

(7) – SIGNAL MASTS WILL BE 12'-0" FROM CENTERLINE OF TRACK.

(8) – BRIDGE PIERS AND ABUTMENTS TO BE MIN. OF 20'-0" FROM CENTERLINE OF TRACK ON TANGENTS AND INSIDE OF CURVES AND 21'-0" ON OUTSIDE OF CURVES WHERE 10' ROADWAY IS PROVIDED.

CONRAIL STANDARD

70051

MINIMUM ROADWAY CLEARANCES

MARCH, 2021

Chief Engineer - Design & Construction

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