

State of Vermont
Utilities & Permits Unit
One National Life Drive
Montpelier, VT 05633-5001
www.aot.state.vt.us

[phone] 802-828-2653
[fax] 802-828-5742
[ttd] 800-253-0191

Agency of Transportation

May 27, 2014

Vermont Gas Systems, Inc.
Jean-Marc Teixeira
85 Swift Street
South Burlington, VT 05403

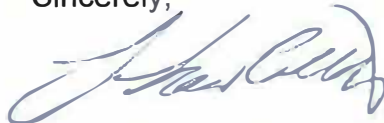
Subject: Addison Natural Gas Pipeline Extension, Phase 1

Dear Mr. Teixeira:

Your application for a permit to work within the State highway right-of-way for the construction of a natural gas transmission pipeline, and other associated work, along and across various State highway routes in the towns of Colchester, Essex, Williston, St. George, Hinesburg, New Haven and Middlebury, has been processed by this office and is enclosed.

Please contact the District Transportation Office #5 prior to starting work in the state highway right-of-way. The telephone number in Colchester is (802) 655-1580.

Sincerely,



Shaun P. Corbett
Utilities & Permits Supervisor
Utilities & Permits Unit

Enclosures

cc: District Transportation Office #5
CHA
Vanasse Hangen Brustlin, Inc.
James Volz, Vermont Public Service Board
Elizabeth Miller, Vermont Department of Public Service
John Beling, Vermont Department of Public Service

PERMIT ID# 38056

FOR AGENCY USE ONLY

Town: VARIOUS
Route: VARIOUS
Mile Marker: VARIOUS
Log Station: VARIOUS

VERMONT AGENCY OF TRANSPORTATION
19 V.S.A. § 1111 PERMIT APPLICATION

Owner's/Applicant's Name, Address & Phone No. VERMONT GAS SYSTEMS
802.951.0387

Co-Applicant's Name, Address & Phone No. (if different from above) _____

The location of work (town, highway route, distance to nearest mile marker or intersection & which side)
CHITTENDEN & ADDISON COUNTIES VERMONT

Description of work to be performed in the highway right-of-way (attach sketch)
CONSTRUCTION OF 12-INCH NATURAL GAS TRANSMISSION PIPELINE WITH VARIABLE WIDTH ROW (SEE ATTACHED PLANS)

Property Deed Reference Book: _____ Page: _____ (only required for Permit Application for access)

Is a Zoning Permit required? Yes No - If Yes, # _____

Is a 30 VSA § 248 permit required? Yes No - If Yes, # _____

Is an Act 250 permit required? Yes No - If Yes, # _____

Other permit(s) required? Yes No - If Yes, name and # of each SEE ATTACHED LIST

Date applicant expects work to begin JUNE 20 14

Owner/Applicant: JEAN-MARC TEIXEIRA Position Title: VP ENGINEERING

(Print name above)

Sign in Shaded area: Jean Marc Teixeira Date: 4/16/2013

Co-Applicant: _____ Position Title: _____

(Print name above)

Sign in Shaded area: _____ Date: _____

INSTRUCTIONS:

- Contact the Agency of Transportation Utilities and Permits Unit (802.828.2653) or your local area Agency Transportation Maintenance District to determine your issuing authority.
- Contact the issuing authority to determine what plans and other documents are required to be submitted with your 19 VSA § 1111 permit application.
- Complete this TA 210 Form (some information may not apply to you) and attach all necessary documents and submit it to the issuing authority. We require this application to be signed by the property owner or their legally authorized representative. Original signatures are required.
- The Owner/Applicant and Co-Applicant (if applicable) declares under the pains and penalty of perjury that all information provided on this form and submitted attachments are to the best of their knowledge true and complete.
- If you have any questions contact the issuing authority.

PERMIT APPROVAL

This covers only the work described below: Permission is granted to work within the state highway right-of-way to construction of a natural gas transmission pipeline and other associated work along and across various state highway routes in the towns of Colchester, Essex Williston, St. George, Hinesburg, New Haven and Middlebury in accordance with the agency standard details and the attached plan and permit special conditions.

The work is subject to the restrictions and conditions on the reverse page, plus the Special Conditions stated on the attached page(s).

Date work is to be completed December 1, 2015

Date work accepted: _____

By Wang Shiller Issued Date May 27, 2014
Authorized Representative for Secretary of Transportation

By: _____
DTA or Designee

NOTICE: This permit covers only the Vermont Agency of Transportation's jurisdiction over this highway under Title 19 Section 1111 VSA. It does not release the petitioner from the requirements of any other statutes, ordinances, rules or regulations.

No work shall be done under this permit until the owner/applicant has contacted the District Transportation Office at:

District #5, (802) 655-1580

TA 210 January 1, 2007 (All previously dated editions are not valid)

Applicant to Complete

SPECIAL CONDITIONS

This permit is granted subject to the restrictions and conditions on the back of the permit, with particular attention given to the Special Conditions listed below. This permit pertains only to the authority exercised by the Agency of Transportation under Vermont Statutes Annotated, Title 19, Section 1111, and does not relieve the Permit Holder from the requirements of otherwise applicable statutes, rules, regulations or ordinances (e.g., Act 250, zoning, etc.). The Permit Holder shall observe and comply with all Federal and State laws and local bylaws, ordinances, and regulations in any manner affecting the conduct of the work and the action or operation of those engaged in the work, including all orders or decrees as exist at present and those which may be enacted later by bodies or tribunals having jurisdiction or authority over the work, and the Permit Holder shall defend, indemnify, and save harmless the State and all its officers, agents, and employees against any claim or liability arising from or based on the violation of any such law, bylaws, ordinances, regulations, order, or decree, whether by the Permit Holder in person, by an employee of the Permit Holder, by a person or entity hired by the Permit Holder, or by a Subcontractor or supplier.

This permit is conditioned on the execution of a lease agreement ("Lease") between Vermont Gas Systems, Inc. ("VGS") and the Vermont Agency of Transportation ("VTrans") for the use of VTrans' property located in right-of-way of the limited access facility known as Vermont Route 289, including the undeveloped portions of the Chittenden County Circumferential Highway (collectively, the "CIRC"), and the payment by VGS of rent in accordance with the terms of the Lease by June 27, 2014. If the Lease is not executed and/or VGS has not tendered payment of its first annual rental payment of \$110,000 by June 27, 2014, this permit shall be null and void.

All work shall be accomplished in accordance with applicable details, profiles and notes of standard drawings B-71 and D-20, copies attached, and the attached plan received and date stamped February 24, 2014.

Please note that the Vermont Agency of Transportation is not a member of Dig Safe. The Permit Holder shall also contact Steve Guyette at his office phone (802) 655-1580 or cell phone (802) 343-2188 to schedule the preconstruction meeting. Mr. Guyette will need to locate and mark all existing buried utility facilities owned by the Agency near the location of the proposed work.

VGS will need to obtain Title 19, Section 1111 permits for all future general maintenance and repairs of the pipeline, and the area VGS proposes to maintain, located within the VTrans highway right-of-way.

Prior to beginning work, the Permit Holder will need to enter into an inspection agreement, to be prepared by VTrans, which will cover periodic inspection, by VTrans representatives, of the work being conducted under this permit.

The Permit Holder agrees to accept all reasonable review and inspection costs incurred by State employees, or their designated representatives during the construction of

Vermont Gas Systems, Inc.
Addison Natural Gas Pipeline Extension, Phase 1
May 27, 2014
Page 2 of 8

this project and to accept all charges incurred to correct conditions caused by noncompliance with the permit conditions or state regulations and to remit payment within 30 days of receiving a statement for these charges.

After the applicant's contractor has been selected, the contractor is required to sign the permit application as the co-applicant. A copy of the signed permit shall be returned to the Utilities & Permits Unit prior to or during the preconstruction meeting.

The Permit Holder is to be made aware that, should VTrans determine to use the CIRC, it will need to relocate the section of pipeline from approximate plan station 34+00 to 40+00 to accommodate this construction. This relocation will be at the Permit Holders expense and will not delay construction of circumferential highway project.

The Jersey Barriers used and their deployment to protect open trenches, as deemed necessary by the District Transportation Administrator, are to be National Cooperative Highway Research Program (NCHRP) Report 350 compliant.

Any work done within the highway rights-of-way that is not addressed by the included plans will be done according to the VTrans 2011 Standard Specifications for Construction, with the latest amendments and all applicable VTrans standard drawings.

The Permit Holder must maintain all existing highway signage throughout the duration of the project.

The Permit Holder shall use methods that will minimize tracking of material onto State highways. If tracking does occur, it will be immediately cleaned up so that traveling conditions and safety of highway users is not compromised. Open broom equipment is NOT to be used.

Any excavation within 5 feet from edge of shoulder and more than 5 feet deep must be sheeted to prevent undermining of the State highway pavement.

The Permit Holder or his/her contractor may not stockpile material nor store equipment within the clear zone of State highways, unless otherwise approved by the District Transportation Administrator. The Permit Holder is advised that clear zone distances vary based on speed limits and highway classification.

The Permit Holder must exercise extreme care when working adjacent to existing storm drainage pipes and drop inlets owned by the State. Any damage caused by the Permit Holder to the storm drainage system must be repaired using new materials. Repairs must be inspected by the VTrans.

The Permit Holder must restore disturbed driveways, sidewalks and lawns located in the highway rights-of-way and maintained by abutting property owners back to their original condition prior to construction.

All work in the State highway right-of-way shall be performed during normal daylight hours and shall cease on Sunday, on all holidays (which shall include the day before and the day following), during or after severe storms, and between December 1 and April 15, without specific, written permission from the District Transportation Administrator.

If night work is approved by the District Transportation Administrator, the Permit Holder will need to submit a lighting plan to be review and approved by VTrans personal.

Any variance from approved plans is to be recorded on "as-builts" with copies provided to the Utilities Engineer and the District Transportation Administrator.

Should any portion of the utility facility installed within the highway right-of-way require relocation or removal due to future highway maintenance or improvements, all expenses will be borne by the Owner, its successors or assigns, and all necessary adjustments shall be completed in a timely manner.

Blasting will not be allowed within the State highway right-of-way without written approval from the VTrans' District Transportation Administrator.

The Permit Holder shall rehabilitate all highway ditches to their former alignment and grade.

The Permit Holder shall replace any disturbed state property bounds. These bounds must be reset by a land surveyor licensed in the State of Vermont.

Backfilling within the highway structural prism (1-on-1 slope starting 5 feet off the shoulder point – see Standard Drawing D-20) must comply with the Agency of Transportation Backfilling Specification 601.08.

The Agency shall not be responsible for maintaining the required cover over the permitted underground gas line. The Permit Holder shall be aware and anticipate that the Agency cleans out ditches and such as part of a regular maintenance program.

The Permit Holder shall allow sufficient distance between the State highway shoulder and the driveway entrance gate to allow queuing room for at least one vehicle when the gate is closed at all permanent maintenance access locations on State highway routes.

A minimum of four (4) feet of cover will be required where the line will run longitudinally with a State highway and near drainage ditching.

Travel lane impacts on State highways are prohibited unless otherwise approved by the District Transportation Administrator.

If at any point in the future VTrans determines that the use of the signalized intersection at U.S. Route 2 and Talcott Road has become a safety concern or has become detrimental to the function of this section of the U.S. Route 2 corridor, VTrans may require the Permit Holder make modifications to the intersection or the signal equipment to address all issues.

Any disturbed stone fill must be replaced as it existed prior to construction.

A preconstruction meeting to discuss work to be completed must be held prior to the Permit Holder's employees or contractor beginning work. The Permit Holder is required to notify the District Transportation Administrator five (5) working days in advance of such meeting.

Roadway shoulder areas must be maintained free of unnecessary obstructions, including parked vehicles, at all times while work is being performed under this permit unless it is part of the approved traffic control plan.

All grading within the highway right-of-way associated with the proposed construction shall be subject to inspection and approval by the District Transportation Administrator or their staff. The Permit Holder shall be responsible for ensuring that all grading work in or on the State Highway right-of-way is in compliance with applicable statutes, rules, regulations or ordinances.

In areas to be grass covered, the turf shall be restored by preparing the area and applying the necessary topsoil, limestone, fertilizer, seed, and mulch all to the satisfaction of the District Transportation Administrator. The Permit Holder shall be responsible for ensuring that all turf restoration work in or on the State Highway right-of-way is in compliance with applicable statutes, rules, regulations or ordinances.

Temporary pavement will be required prior to weekend shutdown after completion of backfilling where an open cut excavation has been made through a roadway subject to vehicular traffic or where construction for any roadway widening for turn lanes has been brought to grade. The temporary pavement shall consist of, at least, 2 inches of compacted bituminous concrete. Temporary pavement shall be properly maintained and shall be replaced with permanent pavement prior to completion of the project or suspension of work for the winter season. **(This is a contingency condition in the event the "open cut method" is approved during construction.)**

Upon completion of the work, the Permit Holder shall be responsible to schedule and hold a final inspection. The Permit Holder is required to notify the District Transportation Administrator five (5) working days in advance of such inspection.

All accesses must be constructed in such a manner as to prevent water from flowing onto the state highway. If of the accesses are not constructed satisfactorily, the District Transportation Administrator can order reconstruction of the access at the Owner's expense.

The Permit Holder is responsible for access maintenance (beyond the edge of paved shoulder). "Access maintenance" will include, but not be limited to, the surface of the access, the

replacement and maintenance of the culvert, as necessary, the trimming of vegetation, and the removal of snow banks to provide corner sight distance.

All permanent accesses (drives) will be paved from the edge of paved shoulder to the highway right-of-way.

All highway crossings shall be installed by jacking or boring in accordance with the attached standard D-20.

Open trenches or pits shall be filled at the end of each day. With permission from the District Transportation Administrator, trenches and pits may be left open for short periods of time if properly protected. In no case shall trenches or pits be left open over a weekend. The Permit Holder shall be responsible for ensuring that all trench or pit work in or on the State Highway right-of-way is in compliance with applicable statutes, rules, regulations or ordinances.

Where a trench is excavated within the roadbed, all backfill material within 24 inches of the bottom of pavement shall be new material from a source approved by the District Transportation Administrator. All backfill material shall be placed in six inch layers and compacted to not less than 95% of the material's maximum dry density as determined by AASHTO Standard Method of Test, T-99, Method C, using air or mechanical tampers. **(This is a contingency condition in the event the "open cut method" is approved during construction.)**

It is a condition of this permit that Owner/Applicant is required to and agrees to promptly and unconditionally pay for full repair and restoration of any and all damages to existing underground utility facilities (meaning any underground pipe, conduit, wire or cable, including appurtenances) that have been brought about by the execution of the permitted work. Owner/Applicant is also required to pay for any costs to repair the highway following and resulting from any repairs to existing utilities occurring as a result of the work covered by this permit. Except with the specific, written permission of the Engineer, the Permit Holder or his/her contractor shall expose all underground facilities to verify their location and depth, at each location where the authorized boring or drilling work crosses a facility; and at reasonable intervals when closely paralleling a facility. Whenever possible, existing facilities should be crossed at a perpendicular angle. The Owner/Applicant shall be responsible for obtaining the modification of the highway permit, if necessary, for any additional survey work before initiating boring or drilling operations under the permit. Failure to fully, promptly, and conscientiously comply with all of the conditions of this paragraph, including but not limited to the obligation to pay for repairs, will be treated as grounds for a refusal by the Agency to grant any further requests by Owner/Applicant for any other permits for subsurface work unless Owner/Applicant furnishes irrevocable financial security, in a type and an amount deemed sufficient by the Agency in its sole discretion, prior to such future subsurface work.

VTrans approved Delineator Posts must be installed at the designated locations to clearly and quickly identify manholes, pipelines, valves, underground utilities, etc.

Flexible fiberglass reinforced composite identification Marker Posts must be installed at the designated locations to clearly and quickly identify underground utilities. Marker Posts shall be American Public Works Association (APWA) color coded with post decals that identify the utility line.

All required trimming/cutting is approved in accordance with the Permit Holder's trimming standards and as agreed to by the abutting property owner, where necessary.

All trees and brush removed under this permit, shall be cut flush with the ground, or as close as practical, and removed from the highway right-of-way.

All wood chips from a chipping operation shall be blown into a suitable vehicle and removed from the highway right-of-way.

The Permit Holder must comply with all additional requirements under 30 V.S.A. Section 2505 (Location near residence) and 30 V.S.A. Section 2506 (Trees not to be injured; exception; penalty).

It is incumbent upon the Permit Holder to verify the appropriate safety measures needed, prior to construction, so proper devices and/or personnel are available when and as needed. Traffic control devices, shall be in conformance with the MUTCD (Manual on Uniform Traffic Control Devices), Agency of Transportation Standards and any additional traffic control deemed necessary by the District Transportation Administrator. Failure to utilize proper measures shall be considered sufficient grounds for the District Transportation Administrator to order cessation of the work immediately.

Construction will be performed in such a way as to minimize conflicts with normal highway traffic. When two-way traffic cannot be maintained, a sign package that conforms to the MUTCD or VAOT Standards, and trained Flaggers shall be provided. The District Transportation Administrator may require a similar sign package with trained Flaggers whenever it is deemed necessary for the protection of the traveling public. In addition, the District Transportation Administrator may require the presence of Uniform Traffic Officers (UTOs); moreover, the presence of UTOs shall not excuse the Permit Holder from its obligation to provide the sign package and Flaggers.

When traffic control becomes so complex that the traffic control cannot be accomplished using Agency standards, the Permit Holder must submit a traffic control plan to the Agency's Utilities Unit for Agency approval prior to beginning work.

The Permit Holder shall ensure that all workers exposed to the risks of moving highway traffic and/or construction equipment wear high-visibility safety apparel meeting the requirements of ISEA (International Safety Equipment Association) "American National Standards for High-Visibility Safety Apparel," and labeled as ANSI (American National Standards Institute) 107-2004, or latest revisions, for Performance Class 2 or 3 requirements. A competent person - one designated by the Permit Holder's Contractor to be responsible for worker safety within the activity area of the State highway right-of-way - shall select the appropriate class of garment. The Engineer may suspend this permit until compliance is obtained.

Independence; Liability: The Permit Holder will act in an independent capacity and not as officers or employees of the State.

The Permit Holder shall defend the State and its officers and employees against all claims or suits arising in whole or in part from any act or omission of the Permit Holder or of any agent of the Permit Holder. The State shall notify the Permit Holder in the event of any such claim or suit, and the Permit Holder shall immediately retain counsel and otherwise provide a complete defense against the entire claim or suit.

After a final judgment or settlement, the Permit Holder may request recoupment of specific defense costs and may file suit in the Washington Superior Court requesting recoupment. The Permit Holder shall be entitled to recoup costs only upon a showing that such costs were entirely unrelated to the defense of any claim arising from an act or omission of the Permit Holder.

The Permit Holder shall indemnify the State and its officers and employees in the event that the State, its officers or employees become legally obligated to pay any damages or losses arising from any act or omission of the Permit Holder.

Insurance: Before beginning any work under this Permit the Permit Holder must provide certificates of insurance to show that the following minimum coverages are in effect. It is the responsibility of the Permit Holder to maintain current certificates of insurance on file with the State for the duration of work under the Permit. No warranty is made that the coverages and limits listed herein are adequate to cover and protect the interests of the Permit Holder for the Permit Holder's operations. These are solely minimums that have been established to protect the interests of the State.

Workers Compensation: With respect to all operations performed under the Permit, the Permit Holder shall carry workers compensation insurance in accordance with the laws of the State of Vermont.

General Liability and Property Damage: With respect to all operations performed under the Permit, the Permit Holder shall carry general liability insurance having all major divisions of coverage including, but not limited to:

Premises - Operations
Products and Completed Operations
Personal Injury Liability
Contractual Liability

The policy shall be on an occurrence form and limits shall not be less than:

\$2,000,000 Per Occurrence
\$2,000,000 General Aggregate
\$2,000,000 Products/Completed Operations Aggregate
\$ 50,000 Fire/Legal Liability

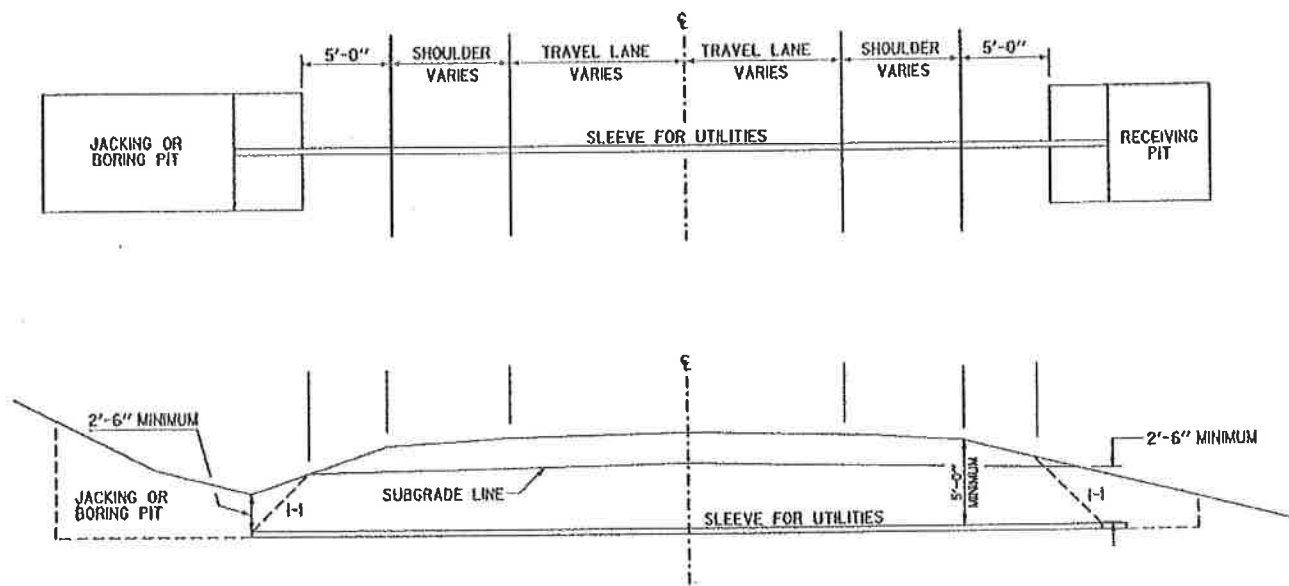
Vermont Gas Systems, Inc.
Addison Natural Gas Pipeline Extension, Phase 1
May 27, 2014
Page 8 of 8

Permit Holder shall name the State of Vermont and its officers and employees as additional insureds for liability arising out of this Permit.

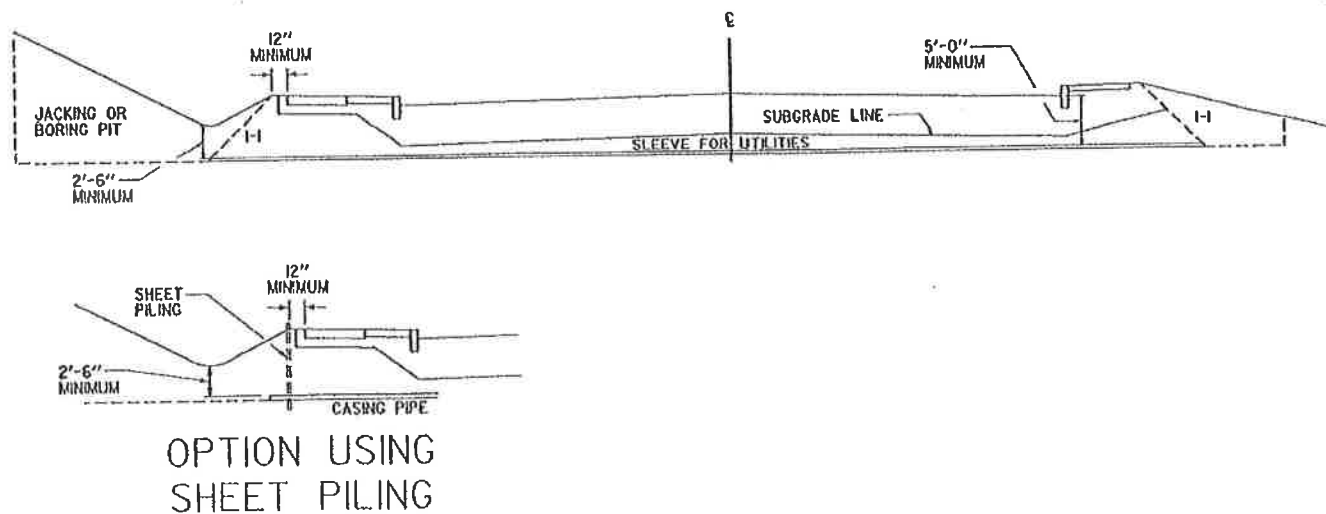
Automotive Liability: The Permit Holder shall carry automotive liability insurance covering all motor vehicles, including hired and non-owned coverage, used in connection with the Permit. Limits of coverage shall not be less than: \$1,000,000 combined single limit.

Permit Holder shall name the State of Vermont and its officers and employees as additional insureds for liability arising out of this Permit.

DETAIL "A" JACKING, BORING, AND DIRECTIONAL BORE - UNCURBED TYPICAL

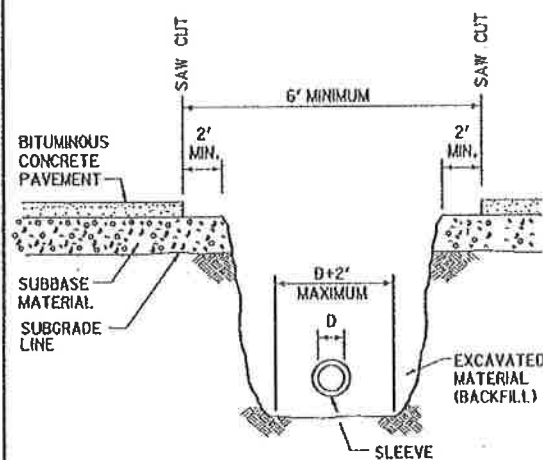


DETAIL "B" JACKING, BORING, AND DIRECTIONAL BORE - CURBED TYPICAL



OPEN CUT AND PAVEMENT REPLACEMENT
APPLICABLE ONLY WHEN SPECIFICALLY AUTHORIZED BY HIGHWAY PERMIT

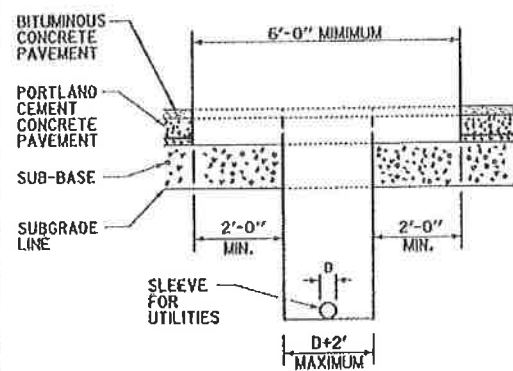
DETAIL "C" OPEN CUT EXCAVATION ACROSS BITUMINOUS CONCRETE PAVEMENT



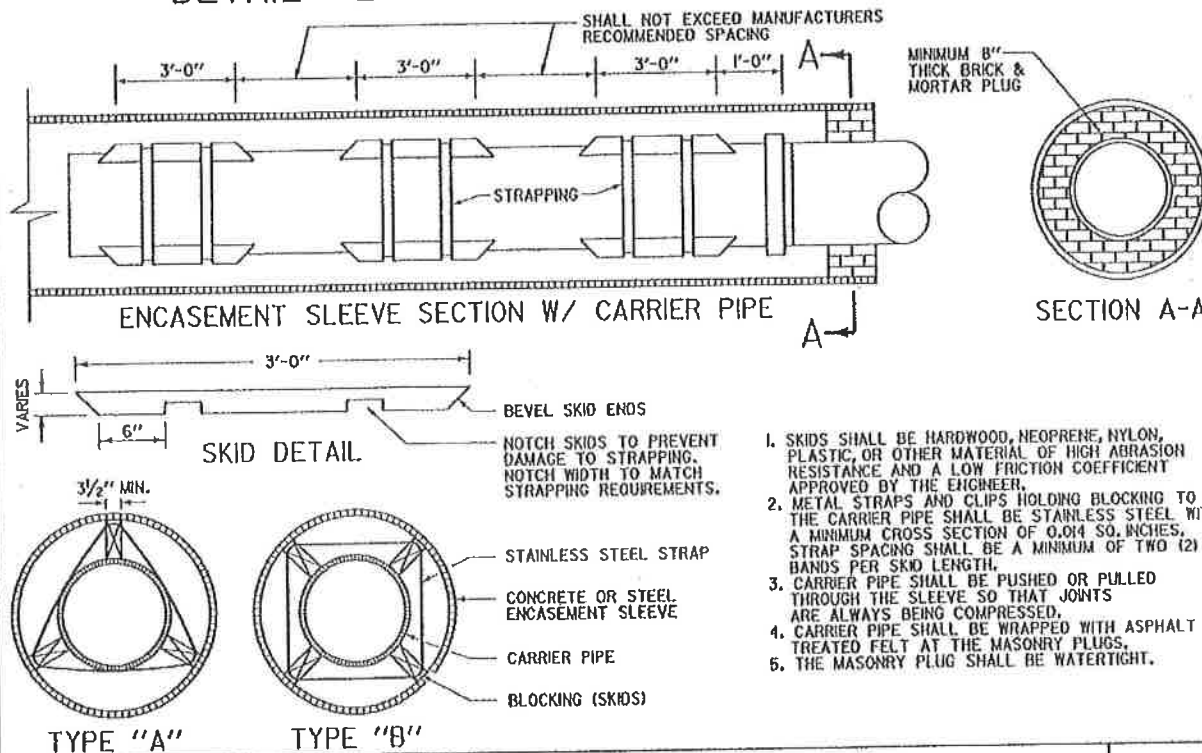
DETAIL "D" OPEN CUT W/ PORTLAND CEMENT CONC. PAVEMENT

IN THE EVENT THAT AN ADJACENT TRANSVERSE JOINT IS LESS THAN FOUR FEET FROM THE CUT, THE PAVEMENT SHALL BE REMOVED TO THAT JOINT.

DRILL & GROUT 4' LONG #5 BARS INTO 2' DEEP HOLES DRILLED EVERY 18" ALONG BOTH SIDES OF SAWN CONCRETE. TIE TOGETHER WITH #5 BARS.



DETAIL "E" CONCRETE OR STEEL SLEEVE



GENERAL NOTES

1. SHEET PILING MAY BE DRIVEN VERTICALLY FIVE (5) FEET OUTSIDE THE SHOULDER POINT, OR ONE (1) FOOT BACK OF THE SIDEWALK, TO ALLOW FOR A SHORTER SLEEVE.
2. SEE DETAIL 'A' OR 'B' FOR DETERMINING SLEEVE LENGTH.
3. IN THE EVENT THAT PERMISSION IS GRANTED TO CUT AN EXISTING PORTLAND CEMENT CONCRETE PAVEMENT, ALL CUTS SHALL BE MADE WITH A SAW TO FULL DEPTH.
4. PORTLAND CEMENT CONCRETE PATCHES SHALL BE PROPERLY CURED FOR SEVEN (7) DAYS BEFORE BEING SUBJECTED TO TRAFFIC LOADS. WHEN HIGH EARLY STRENGTH CEMENT IS USED, PROPER CURING FOR THREE (3) DAYS SHALL BE REQUIRED BEFORE BEING SUBJECTED TO TRAFFIC LOADS. WHEN A HIGH STRENGTH, QUICK SETTING CONCRETE PATCHING COMPOUND IS APPROVED, IT SHALL BE PROPERLY CURED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS BEFORE BEING SUBJECTED TO TRAFFIC LOADS.
5. ALL EXPOSED BITUMINOUS SURFACES SHALL BE COATED WITH EMULSIFIED ASPHALT PRIOR TO PLACEMENT OF NEW BITUMINOUS PAVEMENT.
6. BITUMINOUS CONCRETE PAVEMENTS SHALL BE REPLACED WITH BITUMINOUS CONCRETE PAVEMENT AT THE SAME THICKNESS OF THE PAVEMENT BEING REMOVED, AND IN ACCORDANCE WITH THE VAOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, SECTION 406. PORTLAND CEMENT CONCRETE PAVEMENT AND SUBBASE ARE TO BE REPLACED IN KIND. MATERIAL BELOW SUBGRADE TO BE REPLACED WITH EXCAVATED MATERIAL, OR AS DIRECTED BY THE ENGINEER. ALL BACKFILL MATERIAL SHALL BE MADE IN SIX (6) INCH MAXIMUM LIFTS AND COMPACTED TO NOT LESS THAN 95% MAXIMUM DRY DENSITY.
7. THE DIAMETER OF THE ENCASEMENT SLEEVE SHALL BE EQUAL TO THE DIAMETER OF THE CARRIER PIPE PLUS TWELVE (12) INCHES. (SEE VAOT SPECIFICATIONS, SECTION 625, FOR EXCEPTIONS.)

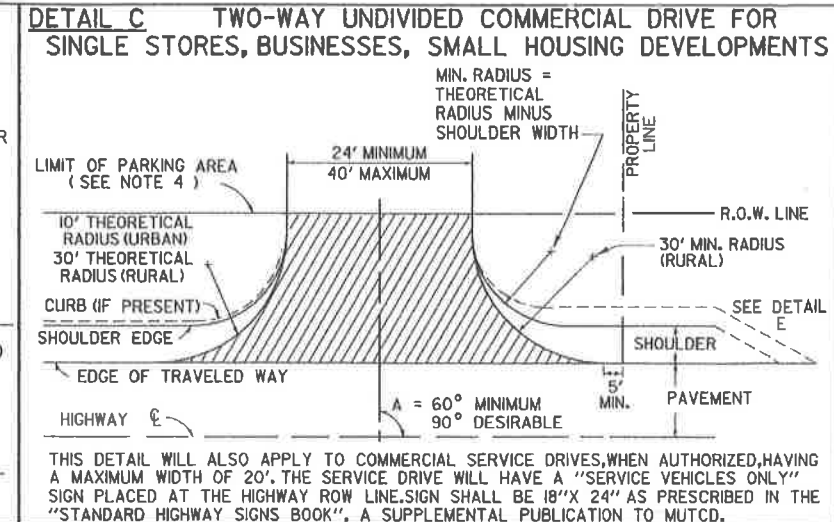
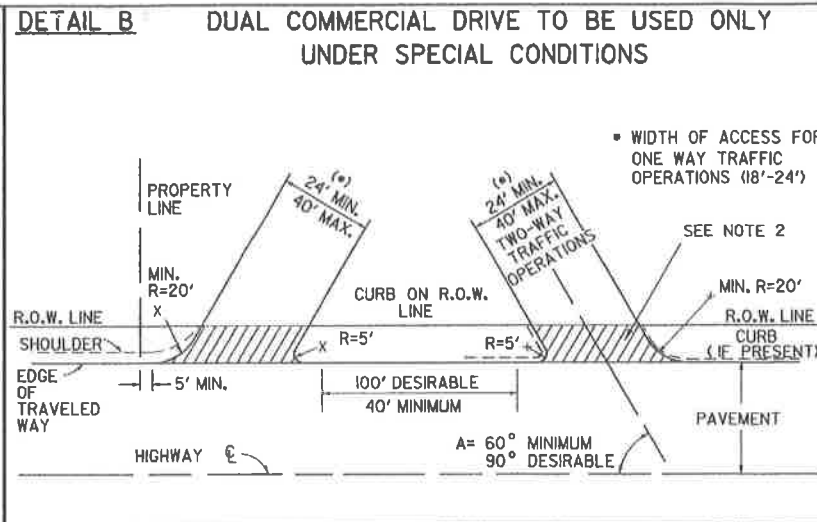
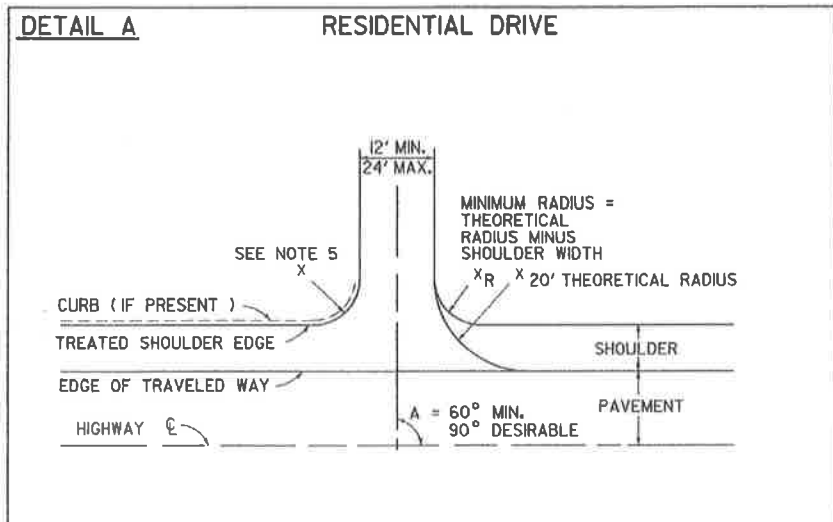
REVISIONS AND CORRECTIONS
DEC. 23, 1974 - ORIGINAL APPROVAL
SEPT. 9, 1975 - CARRIER PIPE AND PORTLAND CEMENT NOTES REVISED
OCT. 30, 1985 - REVISED TO CONFORM WITH 1986 SPECIFICATIONS
JUNE 1, 1994 - REISSUED, WITHOUT CHANGE, UNDER NEW SIGNATURES.
MAR. 10, 1995 - REISSUED, WITHOUT CHANGE, UNDER NEW SIGNATURES.
MARCH 3, 2003 - REVISED TO REFLECT CURRENT DESIGN CRITERIA

APPROVED
[Signature]
DIRECTOR OF PROGRAM DEVELOPMENT
[Signature]
CHIEF OF UTILITIES
[Signature]
FEDERAL HIGHWAY ADMINISTRATION

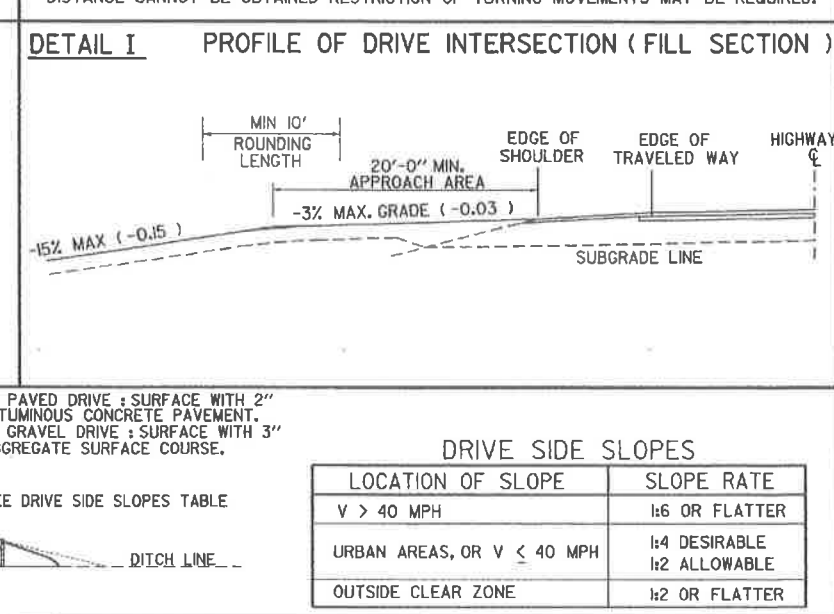
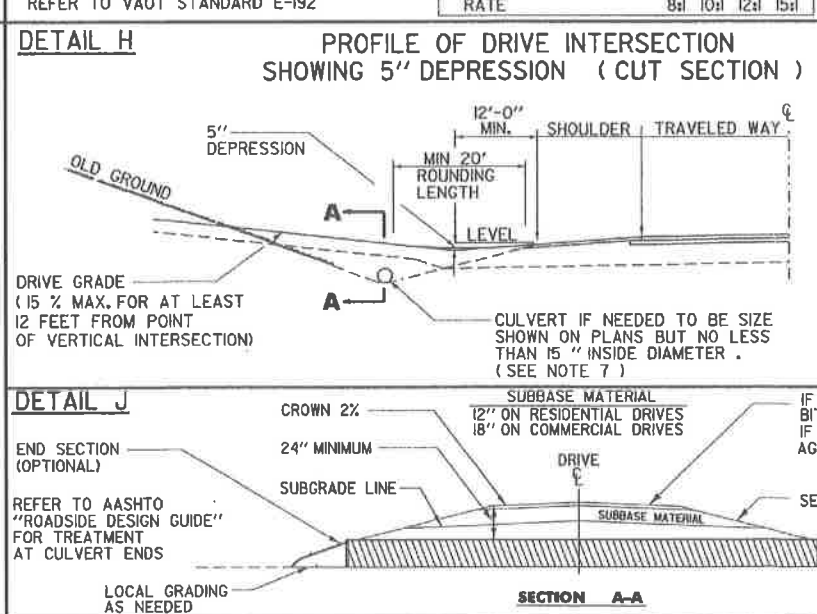
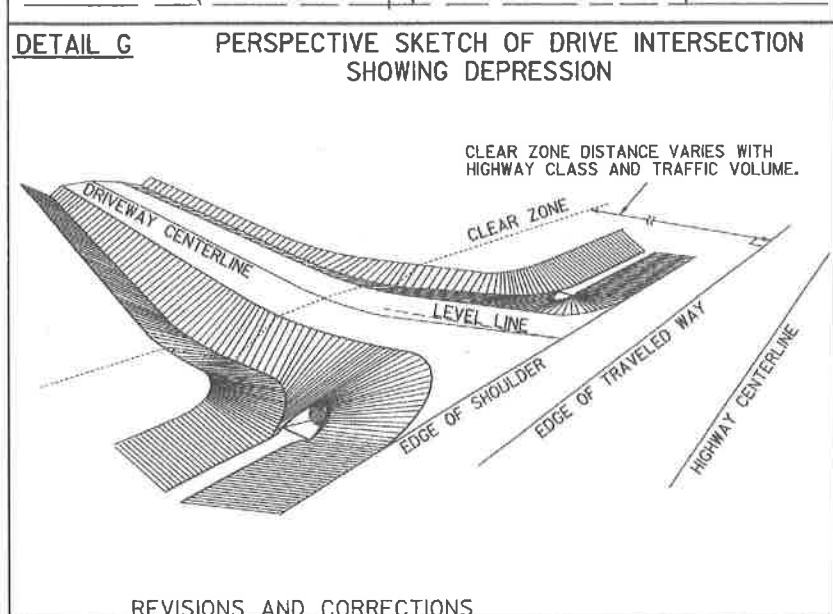
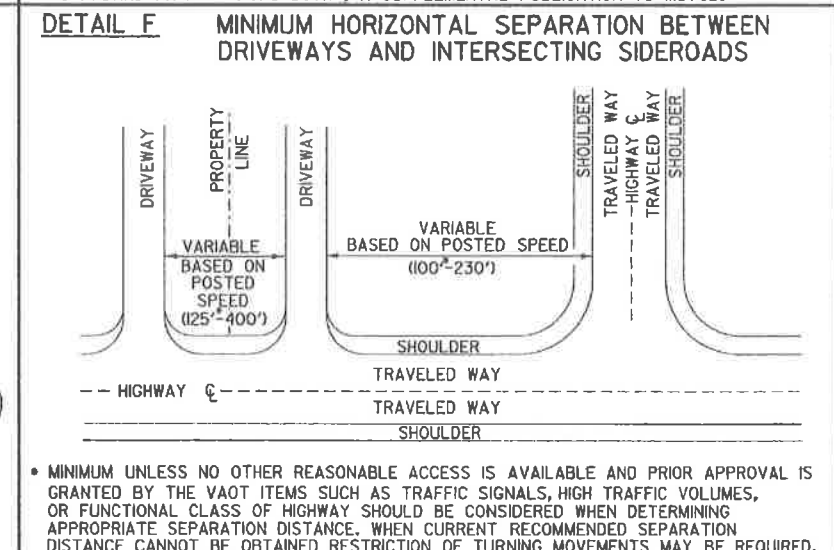
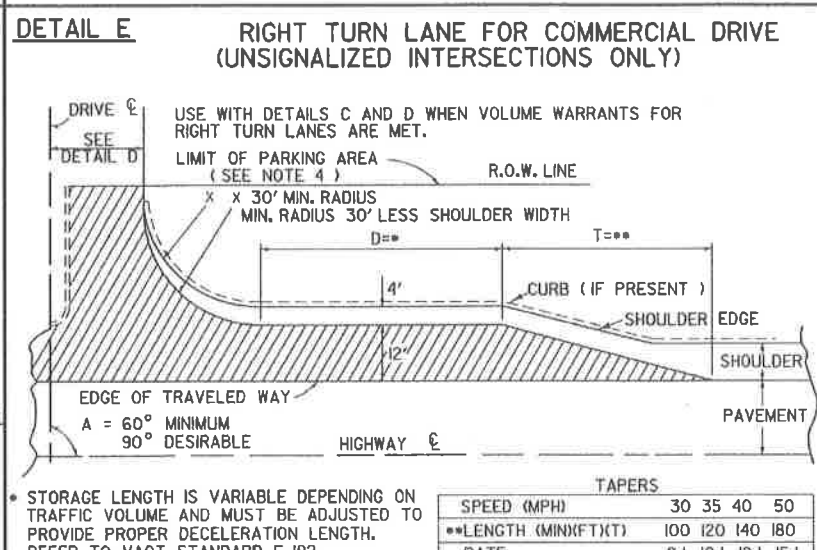
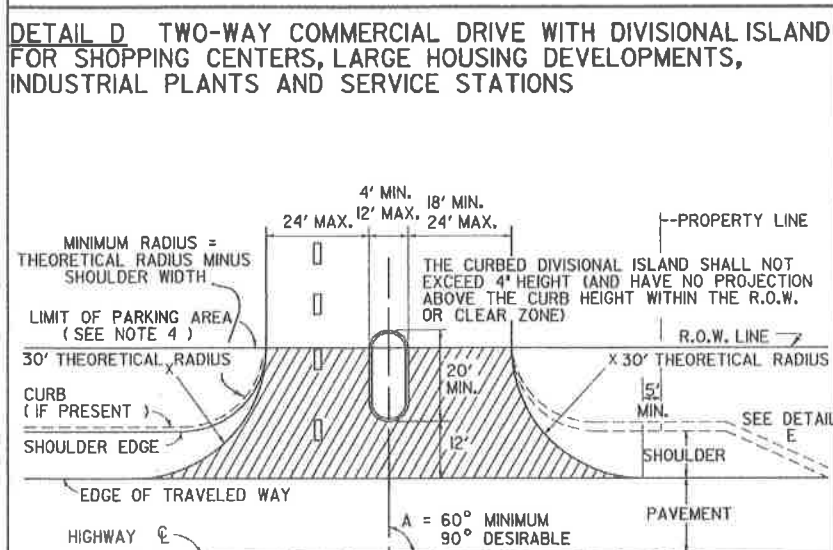
HIGHWAY CROSSING SLEEVES FOR UNDERGROUND UTILITIES



STANDARD
D-20



- NOTES:
- THIS SHEET IS INTENDED FOR USE BY DESIGNERS ON HIGHWAY PROJECTS AND IN CONJUNCTION WITH A PERMIT FOR WORK WITHIN HIGHWAY RIGHTS OF WAY (FORM TA 210). ALL CONSTRUCTION REQUIRED BY THE PERMIT AND INDICATED ON THIS SHEET SHALL BE THE RESPONSIBILITY OF THE APPLICANT AND IS SUBJECT TO THE APPROVAL OF THE VT. AGENCY OF TRANSPORTATION. WHEN USED WITH THE PLANS FOR A HIGHWAY CONSTRUCTION PROJECT, THIS SHEET IS INTENDED TO BE A GUIDE FOR THE DESIGNER CONCERNING DRIVE WIDTHS, HORIZONTAL, VERTICAL AND GEOMETRIC CHARACTERISTICS.
 - ALL COMMERCIAL DRIVES SHALL BE PAVED FROM THE EDGE OF THE TRAVELED WAY TO THE HIGHWAY RIGHT-OF-WAY, TO THE FARTHEST POINT OF CURVATURE ON THE DRIVEWAY EDGE OR AS DIRECTED BY THE DISTRICT TRANSPORTATION ADMINISTRATOR. THIS PAVING IS INDICATED IN DETAILS (B THRU E) BY HATCHING.
 - DEPTH OF SUBBASE AND PAVEMENT TO BE THE SAME AS HIGHWAY OR AS SHOWN IN DETAIL J WITHIN THE LIMITS OF THE HIGHWAY RIGHT-OF-WAY.
 - VEHICULAR ACCESS FROM PARKING AREAS TO THE RIGHT-OF-WAY AT OTHER THAN APPROVED ACCESS POINTS WILL BE PREVENTED BY THE CONSTRUCTION OF CURBING OR OTHER SUITABLE PHYSICAL BARRIER.
 - IF CURB IS PRESENT, SEE APPROPRIATE CURB DETAIL STANDARD OR MATCH TOWN/CITY STANDARD CURB TREATMENT.
 - WHERE TRAFFIC VOLUME FOR A PROJECT IS SUBSTANTIAL THE AGENCY MAY REQUIRE SPECIAL LANES FOR TURNING, SIGNALS OR OTHER MODIFICATIONS. BASED ON TRAFFIC STUDIES THE AGENCY WILL DETERMINE SPECIFIC TREATMENT TO BE USED. ON DEVELOPER PROJECTS THE AGENCY WILL WORK WITH THE APPLICANT TO IMPLEMENT CHANGES TO THE STATE HIGHWAY.
 - CIRCULAR DRAINAGE CULVERTS UNDER DRIVES SHALL HAVE A MINIMUM INSIDE DIAMETER (I.D.) OF 15" PIPE ARCHES. USED UNDER DRIVES SHALL HAVE A MINIMUM INSIDE CROSS-SECTIONAL AREA EQUIVALENT TO THAT PROVIDED BY A 15" CIRCULAR PIPE.
 - THE OFFSET BETWEEN THE PROPERTY LINE AND THE EDGE OF THE DRIVEWAY MAY BE GOVERNED BY LOCAL ZONING LAWS. DRIVEWAY WIDTH RESTRICTIONS SHOWN PERTAIN ONLY TO THE AREA WITHIN THE HIGHWAY R.O.W. OR THE END OF THE TURNING RADIUS WHICHEVER IS GREATEST.
 - DRIVEWAY GRADES STEEPER THAN THOSE SHOWN MAY BE ALLOWED AS LONG AS A 20' APPROACH AREA IS ACHIEVED FOR THE VEHICLE TO PAUSE BEFORE ENTERING THE HIGHWAY. (WHERE CURB & SIDEWALKS EXIST, SEE STANDARDS C-2A & C-2B)
 - INTERSECTION SIGHT DISTANCES, EQUAL TO OR GREATER THAN THOSE SHOWN BELOW, SHOULD BE PROVIDED IN BOTH DIRECTIONS FOR ALL DRIVES ENTERING ON PUBLIC HIGHWAYS, UNLESS OTHERWISE APPROVED BY THE AGENCY OF TRANSPORTATION. INTERSECTION SIGHT DISTANCE IS MEASURED FROM A POINT ON THE DRIVE AT LEAST 15 FEET FROM THE EDGE OF TRAVELED WAY OF THE ADJACENT ROADWAY AND MEASURED FROM A HEIGHT OF EYE OF 3.5 FEET ON THE DRIVE TO A HEIGHT OF 3.50 FEET ON THE ROADWAY.



SIGHT DISTANCE CHART

POSTED SPEED OR DESIGN SPEED (M.P.H.)	MINIMUM STOPPING SIGHT DISTANCE (FT)	MINIMUM INTERSECTION SIGHT DISTANCE (FT)
25	155	280
30	200	335
35	250	390
40	305	445
45	360	500
50	425	555
55	495	610
60	570	665
65	645	720

THE ABOVE VALUES ARE TAKEN FROM THE 2004 AASHTO "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS & STREETS."

NOTE: ADVANCE WARNING SIGNS WILL BE REQUIRED IF OBTAINABLE INTERSECTION SIGHT DISTANCES ARE BELOW MINIMUM STOPPING SIGHT DISTANCES.

THE CHART IS ENTERED TO SELECT DESIGN VALUES BASED ON THE POSTED SPEED LIMIT IN MPH. VALUES FOR DESIGN ARE CALCULATED BASED ON THE DESIGN SPEED IN MPH.

* ASSUMES A GAP OF 7.5 SECONDS IN THE TRAFFIC STREAM ON THE HIGHWAY MAINLINE BASED ON THE HIGHWAY DESIGN SPEED IN MPH. THIS ALLOWS A STOPPED PASSENGER VEHICLE TO ENTER THE MAINLINE FROM THE DRIVE WITHOUT UNDULY INTERFERING WITH THE HIGHWAY OPERATIONS.

- ### REVISIONS AND CORRECTIONS
- DEC. 11, 1992 - THIS STANDARD SUPERCEDES B-7(7/23/80R), B-71A (3/12/90), AND B-13 (12/14/71).
 - JUNE 1, 1994 - REISSUED, WITHOUT CHANGE, UNDER NEW SIGNATURES.
 - MAR. 10, 1995 - REISSUED, WITHOUT CHANGE, UNDER NEW SIGNATURES.
 - NOV. 16, 2000 - CHANGES MADE TO CONFORM WITH LANGUAGE AND DIMENSIONS IN ACCESS MANAGEMENT PROGRAM GUIDELINES.
 - FEB 1, 2004 - CHANGES MADE TO SIGHT DISTANCE CHART TO CONFORM WITH NEWEST AASHTO CRITERIA.
 - JULY 8, 2005 - CHANGE MADE TO OBJECT HEIGHT TO CONFORM WITH NEWEST AASHTO CRITERIA

APPROVED

Richard F. Farnsworth
DIRECTOR OF PROGRAM DEVELOPMENT

Craig S. Keller
CHIEF OF UTILITIES AND PERMITS

Michael J. Conner
FEDERAL HIGHWAY ADMINISTRATION

STANDARDS FOR RESIDENTIAL AND COMMERCIAL DRIVES

