

**ACCESS CONTROL POLICY & PROCEDURES**  
**Polk County Highway Department**

<b>Policy No. :</b>	7A-1a	<b>Effective Date:</b>	5/7/08
<b>Committee Resolution:</b>	01-08	<b>Revised:</b>	6/4/09

- 1) **Purpose.** This policy and procedure is adopted pursuant to Wisconsin Statute Section 86.07(2) to regulate and control access to Polk County Highways in order to promote the public safety, convenience, general welfare and economic viability and to protect the public investment in existing and proposed county highways. The design standards underlying the regulations shall promote the orderly and safe movement of vehicles to and from private property in a manner that creates as little interference to through highway traffic as is possible and to control the use of drainage structures and appurtenances as may be necessary to preserve the physical structure of county trunk highways.
- 2) **Definitions.**
  - a. Access: The connection of a field entrance, driveway, private road, or public road to a county trunk highway (CTH).
  - b. Access Permit: A permit issued by the Polk County Highway Commissioner granting permission to enter onto the CTH right-of-way for the purpose of constructing a field entrance, driveway, private road, or public road onto a CTH or to pave an existing entrance, driveway, or road.
  - c. ADT: The average daily traffic on a segment of highway.
  - d. Agriculturally Related Residences: Housing units in which at least one resident earns at least 25 percent of his or her gross income from farm or agricultural operations on the same or adjoining parcel, or a parent or child of the operator of a farm on the same or adjoining parcel.
  - e. County Trunk Highway (CTH): Any segment of a highway that is under the jurisdiction of the Polk County Highway Department.
  - f. Driveway: Any access for motorized vehicles to one or two parcels.
  - g. Field Entrance: An access, the only use of which is an entrance or exit to an agricultural parcel of land for fieldwork purposes.
  - h. Commissioner: The Polk County Highway Commissioner or his designee.
  - i. Highway Department or Department: The Polk County Highway Department.
  - j. Limited Access Highway: Highways on which access is limited to and provided by entrance and exit ramps.

- k. Parcel: The area of land outside the public highway right-of-way and within the property lines of a given piece of property.
- l. Person: Includes any individual, firm, association, joint stock association, organization, partnership, limited trust, body politic, governmental agency, company, or corporation and includes any trustee, receiver, assignee, or other representative thereof.
- m. Road: Any road, street, alley, expressway, highway, avenue, parkway, lane, drive, boulevard, circle, bypass or other pathways intended for the public use of motorized vehicles to obtain access to more than two parcels.
- n. Rural CTH: Any CTH with a speed limit of 55 MPH as of January 1, 2007.
- o. Semi-urban CTH: Any CTH with a speed limit less than 55 MPH but more than 35 MPH as of January 1, 2007.
- p. Stopping Sight Distance: A measurement calculated to determine the safe stopping distance of a vehicle at a certain speed.
- q. Urban CTH: Any CTH with a speed limit of 35 MPH or less as of January 1, 2005.
- r. Used or occupied: Also means intended, designed, or arranged to be used or occupied.
- s. Vision Corner: A triangular shaped area in which obstructions to the line of sight of vehicle operators are controlled. (See Appendix B Vision Corner Diagram)

### 3) **Administration and Enforcement.**

- a. The Commissioner is hereby authorized to administer this policy and procedure. Applications for access permits and variances shall be made to the Commissioner prior to beginning construction of an access. The Commissioner shall review the proposed development or construction and shall either grant or deny the proposed access permit based upon the provisions, standards, and requirements of this policy and procedure within 10 business days.
- b. Upon denial of an application for permit, the Commissioner shall provide written notification of same to applicant. The written notice shall contain an order requiring the applicant to restore the highway to its former condition within ten (10) working days of receipt of such written notice and order and in the event that restoration has not so commenced, the Commissioner shall cause any necessary removal of access and restoration as authorized pursuant to Wisconsin Statute Section 86.07(2) and the applicant shall be liable for the costs of removal and restoration.
- c. Persons commencing work prior to issuance of an approved permit are subject to denial of permit; an order for removal and restoration as

provided above; and prosecution, fines and court costs as provided by Wisconsin Statute Section 86.07(2).

**4) Interpretation.**

- a. All restrictions within this policy and procedure apply to the use of land within the rights of way of Polk County highways. Whenever it is questionable as to whether or not an object or a part of an object is within the jurisdiction of this policy and procedure, the entire object shall be considered to be entirely within that jurisdiction.
- b. Substantial changes in use of an existing access shall be deemed to constitute a new access. Substantial changes in use shall include but not be limited to using a field entrance as an access to a residence, or converting a residential parcel to a commercial or industrial parcel. Non-substantial modifications to an existing access including paving, replacing or repairing a culvert, and other maintenance activities require a permit but will not need to meet the spacing and site distance requirements of this policy and procedure.

**5) Application and Permits.**

- a. No person shall construct an access to a County Trunk Highway or substantially change the use of an existing access or make non-substantial modifications to an existing access without a permit granted pursuant to this policy and procedure.
- b. Persons desiring permission to construct an access to a County Trunk Highway or to pave an existing access shall complete an application on a form approved by the Commissioner. Each application shall include a copy of the parcel/layout or sketch of property, showing exact location of the proposed access, any existing access and any other pertinent information. A non-refundable permit fee shall be submitted with each application in accordance with the following schedule:

Type "C" Access Credit	\$500.00 + Surety Bond/Letter of
Type "B" Access	500.00
Type "A" Access – Residential	\$285.00*
Field Entrance	175.00
Field Site Visit Request	100.00
Minor Modifications	50.00
Paving Existing Access	50.00

*\*Residential fee includes the required swing arm mail box support stand, provided by Polk County Highway Department upon final inspection of the driveway. The support must be installed at all new entrances approved on County roads in compliance with mailbox safety standards provided with the application.*

- c. The application shall contain a description of the proposed work on the right-of-way, culvert requirements including size and length, intersection clearances, distances to driveways, and details of the proposed installation, including reference to attached sketches, if any.
- d. All access permits shall expire one (1) year after application and approval, unless extended by the Commissioner. Construction must be completed within this time.
- e. Any person applying for a permit who fails to comply with the conditions of the permit, prior to the permit's expiration date, shall forfeit any permit fee.
- f. The Commissioner may require scale drawings or other information prior to granting a permit.
- g. The applicant shall be liable for the cost of all materials including culverts, labor, equipment and other incidentals connected with the construction of the access. The entire cost of installing and maintaining the access and culvert, including restoration, shall be the financial responsibility of the applicant.
- h. The applicant agrees to hold harmless and indemnify Polk County, its officers, agents and employees against any loss or damage for any personal injury or property damage sustained by reason of the exercise of this permit.
- i. Applications for permits for Type "A" accesses, field entrances, and non-substantial modifications to an existing access shall be accompanied by payment of applicable permit fee. Applications for permits for Type "B" and Type "C" accesses shall be accompanied by \$500 permit fee, plus a \$10,000 Surety/Performance Bond or Letter of Credit valid for one (1) year after completion of access. The Surety/Performance Bond or Letter of Credit will be released one year after completion and acceptance of the work by the Highway Commissioner.
- j. The applicant shall call the Diggers Hot Line (800-242-8511) and any other underground utilities not listed with Diggers Hot Line prior to the commencement of excavation.
- k. The applicant shall restore the highway right-of-way to the satisfaction of the Commissioner as soon as possible, weather permitting.
- l. All work within the right-of-way shall be done in such a manner so as not to interfere with traffic on the adjoining roadway unless authorized by the Highway Commissioner.
- m. During construction of the access, the applicant shall keep the highway free of mud and debris. The highway will be swept clean at the direction of the Commissioner.

6) **Regulations.**

- a. Existing Access. The use of an access existing prior to January 1, 2007, will be permitted, provided that any improvements or alterations to the access shall comply with this policy and procedure.
- b. Vacated Access. If the Commissioner determines that the use of an access has been discontinued for a period of at least two years, the Commissioner shall notify the owner by certified mail that the access is to be considered vacated. The Commissioner will allow the owner 30 days to reply. If after 30 days the Commissioner determines the access has been vacated, the access shall be considered vacated and its use will no longer be permitted. The Commissioner shall have vacated accesses removed.
- c. Access Prohibitions. No person shall construct an access within the meaning of this policy and procedure unless a valid permit has been obtained from the Commissioner. Entrance to or exit from a County Highway shall be prohibited except at designated access points. No person shall alter, in any way, existing appurtenances or features within the Highway right-of-way including but not limited to ditches, drainage ways, culverts, bridges or pavement surfaces (including existing access points) until or unless a permit has been obtained from the Commissioner. Any access or appurtenances constructed, modified, altered without or contrary to a valid permit obtained from the Commissioner shall be removed and the costs of removal shall be borne by the person causing such construction, modification or alteration.
- d. Subdivision of Land. Before any parcel of land is subdivided, the subdivider shall demonstrate that access can be provided to each proposed parcel in compliance with all the requirements and conditions of this policy and procedure.

7) **Access Spacing and Frequency.**

- a. Only one access per parcel will be allowed unless otherwise provided in this policy and procedure.
- b. Commercial and industrial zoned parcels may be allowed two (2) accesses, provided each access meets the criteria of this policy and procedure, the development requires more than 50 parking spaces, and/or if 2 access points would provide for safer movement of traffic in the opinion of the Highway Commissioner.
- c. For parcels fronting on more than one road, accesses shall be granted only on the lower classified road or the road with lower ADT, unless the Commissioner finds that granting access to the other road to be in the best interest of the public.
- d. Access permits shall not be issued where the lineal distance between accesses on the same side of the CTH would become less than 200 feet on an Urban CTH, 300 feet on a Semi-urban CTH, and 400 feet on a

Rural CTH (except for Agricultural Related Residences), unless there is no other alternate to providing access to an existing parcel. Access permits for driveways to Agriculturally Related Residences shall not be granted where the lineal distance between accesses would be less than 300 feet on a Rural CTH.

- e. No field entrance or driveway shall be permitted at a distance of less than 200 feet on an Urban CTH, 300 feet on a Semi-urban CTH and 600 feet on a Rural CTH from the centerline of an existing road that intersects the CTH in question.
  - f. No private or public roads shall be permitted at a distance less than 600 feet on a Rural CTH and 300 feet on an Urban CTH or Semi-urban CTH, from the centerline of an existing road that intersects the CTH in question. Where possible, roads connecting to a CTH should not be staggered creating "T" intersections but should connect with the CTH directly across from the street or driveway on the other side of the highway.
  - g. Driveways and/or roads shall not be permitted within 600 feet on a Rural CTH and 300 feet on an Urban CTH and Semi-urban CTH of an entrance or exit ramp of a controlled access highway.
  - h. In the event that the applicant proposes a use not covered by this policy and procedure, the Commissioner shall make the determination of the applicable criteria based on the need to preserve highway capacity and safety. Access proposals which conflict with safe driving standards may not be allowed.
  - i. For the purposes for determining access spacing and frequency, driveways used to gain access to minor utility features will not be counted. Minor utility features include such items as fire hydrants on a potable water supply main, telephone or electrical switch boxes, and similar items that require infrequent maintenance using motorized vehicles.
- 8) **Design Standards.** Accesses shall be constructed in compliance with the following design standards:
- a. Culverts for Type "A" accesses and field entrances shall be at least 28 feet long and culverts for Type "B" and "C" accesses shall be at least 40 feet long. All culverts shall be placed under at least one foot of cover, be a minimum of 15 inches in diameter or equivalent, be at least 10 feet from the nearest culvert, be at least 10 feet from the nearest lot line, and be constructed of corrugated metal, concrete, or plastic meeting Wisconsin Department of Transportation specifications. Apron endwalls shall be provided (see Appendix D). Apron endwalls for all culverts 15 inches in diameter or larger and all culverts where adjoining culverts are so equipped, shall be equipped with wheel guards (see Appendix E). Culvert size (diameter) will be determined by the Highway Commissioner

so as to allow for proper drainage if the minimum specified above is not adequate.

- b. Slopes forming the sides of the access shall not be steeper than 4 to 1 (25%) or that of the slopes forming the sides of the CTH, whichever is less (or flatter).
- c. Access runoff onto a County road is strictly forbidden. A pitch of one-half inch per foot away from the roadway to the center of the ditch flow line or to the edge of the shoulder if no ditch is present shall be maintained for all accesses except where there is an existing curb and gutter along the CTH. Additionally, no access shall be constructed on CTH right-of-way with grades greater than 6.0%. At the discretion of the Commissioner, a pitch of 2.0% away from the roadway to the center of the ditch flow line or to the edge of the shoulder if no ditch is present may be allowed for proposed public or private roads.
- d. Retaining walls, landscape timbers, boulders, rip-rap, etc. are prohibited on in-slopes and in the County right-of-way, unless specified by the Department.
- e. Pavement of accesses shall consist of blacktop or compacted crushed aggregate. Concrete shall not be allowed within the right-of-way except where there is an existing curb and gutter along the CTH.
- f. Curb and Gutter (where existing) shall be removed for the new access and new curb and gutter constructed. At the discretion of the Highway Commissioner, an approved contractor may be allowed to remove only the curb head by using a machine mounted concrete saw in lieu of removing and replacing the curb and gutter.
- g. Angle of Access shall be as close to 90° with the centerline of the CTH as possible, but not less than 45°.
- h. Interior Turnarounds shall be provided as necessary such that vehicles do not need to back out onto the CTH.
- i. Existing Highway Property including road surfaces, curbs, shoulders, slopes, ditches and vegetation shall be restored to its original condition by the applicant.
- j. Vision Corners shall be provided and maintained at each access and they shall be free of all obstructions in accordance with Appendix B Vision Corner Diagram; however, vision corners are not required for field entrances and Type "A" accesses. Vision corners are to be measured from a point 3.5 feet above the center of the proposed access to two points 3.5 feet above the center of the nearest on coming lane of the CTH at a distance of "A" or "B" (as shown on said Diagram) from the point where the CTH meets the proposed access.
- k. Facing Access Points on opposite sides of a CTH shall be located directly opposite each other whenever possible.

- l. Type "A" Access standards shall be used for field entrances, driveways, and private roads serving less than 5 residential dwelling units. (See Appendix A)
  - m. Type "B" Access standards shall be used for residential developments with 5-20 units and commercial or industrial developments of 25,000 square feet or less. (See Appendix A)
  - n. Type "C" Access standards shall be used for residential developments of over 20 units, commercial or industrial developments of over 25,000 square feet, and all public roads. (See Appendix A)
  - o. Sight Distance Requirements for all accesses are required as shown on Appendix C Sight Distance Diagram.
  - p. An AASHTO approved swinging arm mailbox support kit is provided upon final inspection of all Type "A" residential applications and is required to be installed within 90 days of receipt. Placement of the mailbox support is the responsibility of the applicant. Contact your local postal carrier to determine which side of roadway to use. Refer to the "Mailbox Safety" standards, included with your application, to determine height of support. The preferred height is 48 inches, to minimize damage to Department snow and ice control equipment. Contact Diggers Hotline before driving the support post in the ground.
- 9) **Hazard Marking and Lighting.** During construction all access locations shall be properly signed and marked per standard work zone control requirements (refer to the Wisconsin Manual on Uniform Traffic Control Devices). In addition, when access work zones will be left overnight, proper flashing lights, steady burn lights, and barricades will be provided. All work zone safety equipment will be furnished by and at the expense of the applicant. Once started, all construction within the right-of-way shall be completed as promptly as practical.
- 10) **Denials and Informal Resolution.** Upon denial of an access for any reason, the application will be referred to the Commissioner for final review. The Commissioner will notify the applicant of the pending review and work with the applicant to resolve issues on an informal basis. If the application is denied through the informal resolution and final review process, the Commissioner will notify the applicant in writing of the final denial and appeal process. Written notification of denial of an application for permit will conform to Paragraph 3, b., above.
- 11) **Appeals.** Any person aggrieved by a decision made in the administration of this policy and procedure may appeal to the Polk County Highway Committee. Appeals shall be filed within 30 calendar days following an administrative decision and notification by the Commissioner. The appeal shall specify the legal description of the parcel and access location in question, and the reason for the appeal. The Highway Committee shall

make a decision on the appeal within 30 calendar days from the day the appeal is filed.

**12) Variance.**

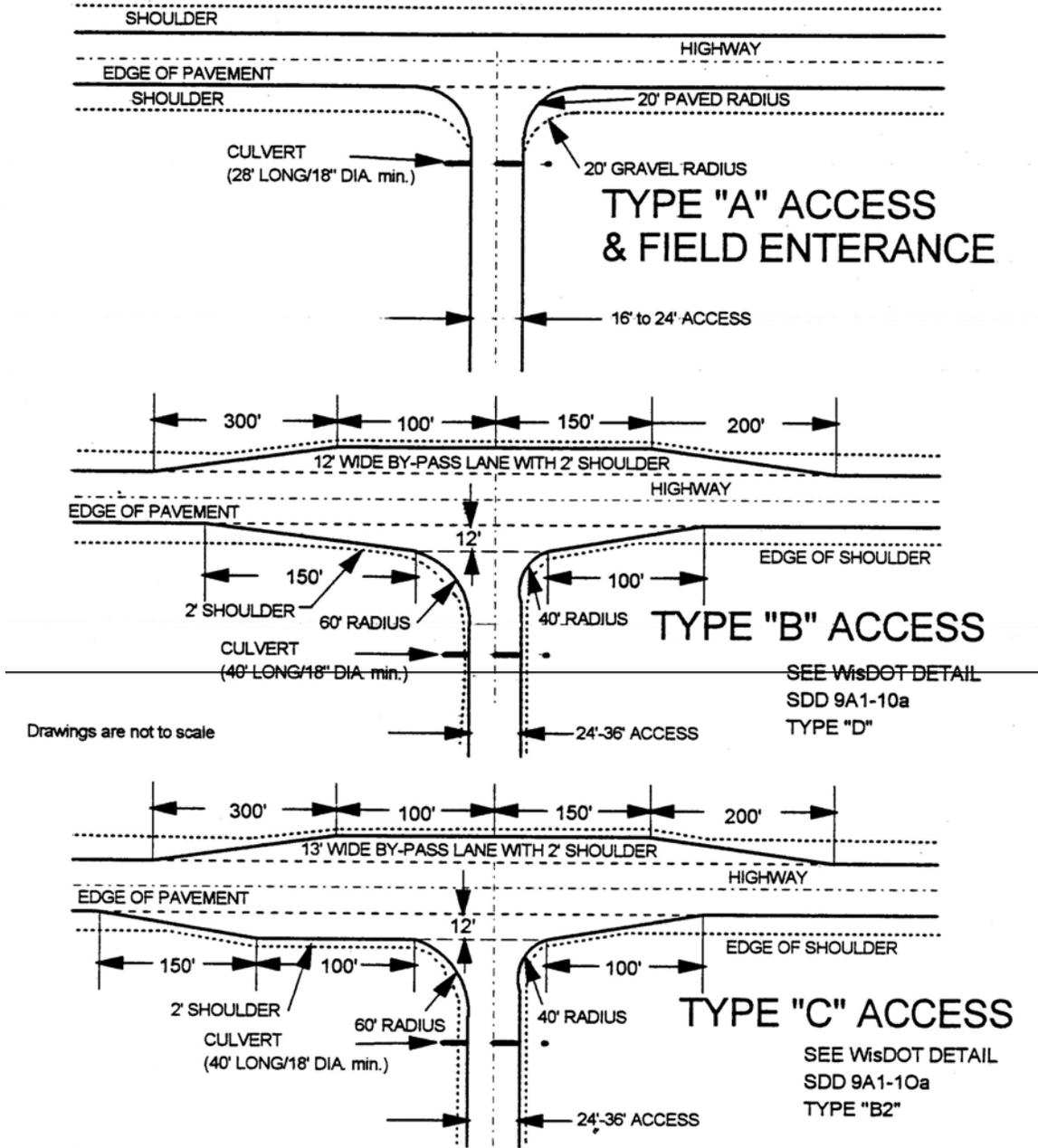
- a. Any deviation from the standards of this rule, for which a permit has been denied by the Commissioner, may be allowed only upon submissions of an application for a variance; payment of the variance application fee in the amount of \$500.00; the holding of a public hearing by the Highway Committee; and issuance of a permit upon granting of the variance.
- b. The committee may authorize, in specific cases, such variance from the terms of the policy and procedure where the literal enforcement of the policy and procedure would, given the unique conditions of the property of the applicant, result in an unnecessary hardship. An applicant for a variance has the burden of proving an unnecessary hardship. A variance shall:
  - i. Be consistent with the spirit and purpose of the policy and procedure. The Committee will evaluate the hardship in light of the purpose of the rule at issue.
  - ii. Not be granted because of conditions that are common to a group of adjacent lots or premises (in such a case, the rule itself should be considered but changed following correct procedures.)
  - iii. Not be granted unless it is shown that the variance will not be contrary to the public interest and will not be damaging to the right of other persons or property values in the area.
  - iv. Not be granted for actions which require an amendment to the policy and procedure.
  - v. Not be granted solely on the basis of economic gain or loss.
  - vi. Not be granted for self created hardship.
- c) If the Committee finds that there exists an unnecessary hardship, the Committee can grant a variance. The variance should only provide for the minimum relief needed to overcome the hardship.
- d) When a variance is granted, the applicant shall be notified in writing by the Highway Commissioner. A copy of this notification shall be maintained with the variance records of the Highway Department.

- 13) Violations.** In the case of any violation of this policy and procedure, the Commissioner may institute appropriate legal action. Each day in which a violation continues to exist shall constitute a separate offense. No person as defined by par. (4) above shall resist, obstruct, or interfere in any way with the Commissioner in the enforcement of this policy and procedure, or fail to obey the Commissioner's order.

- 14) **Penalties.** Any person found guilty of violating any part of this policy and procedure or who refuses to comply with any provision of this policy and procedure shall be subject to a fine not less than \$10 or more than \$200 for each day for each offense, together with the costs of prosecution.
- 15) **Removal Authority.** Pursuant to Wis. Statute Section 86.07(2), in the event that any construction, modification or alteration has been made in violation of this policy and procedure the Highway Commissioner or Highway Committee may order the restoration of any county highway to its former condition consistent with Paragraph 3, b. and c., above . The person who caused such construction, modification or alteration in violation of this policy and procedure shall be liable for and reimburse the Highway Department for the actual costs of restoration.
- 16) **Effective Date.** The Access Control Policy and Procedure shall be effective on passage by the Highway Committee.

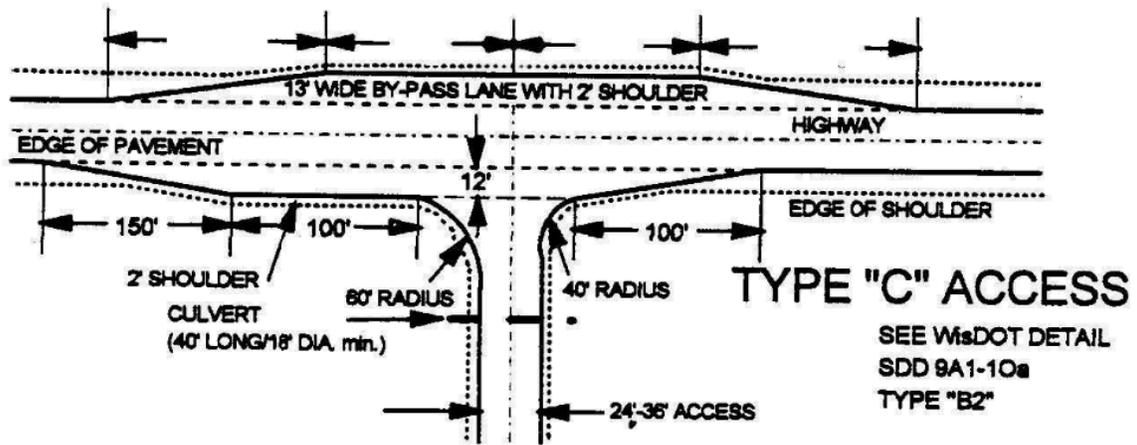
Appendix A  
Page 1 of 2

Polk County  
Highway Department Access Requirements



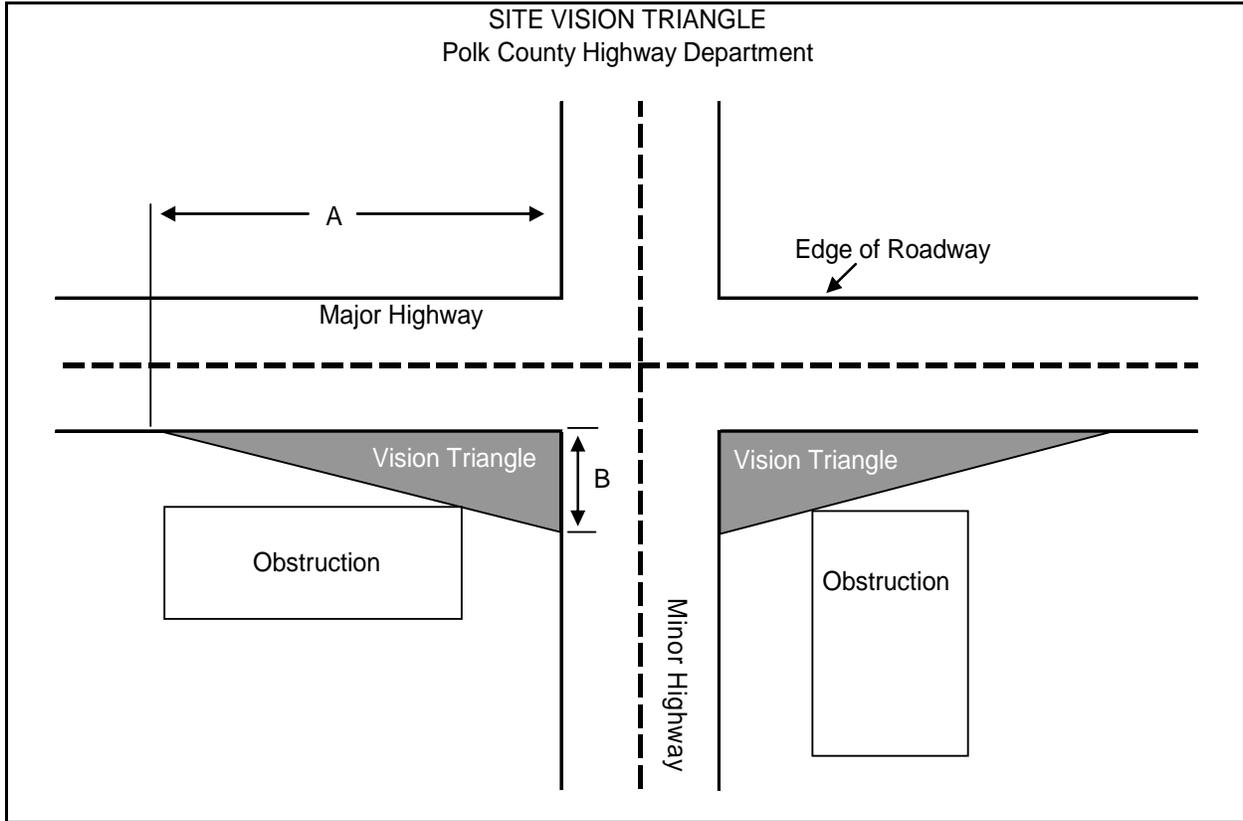
ACCESS STANDARDS

Appendix A continued  
Page 2 of 2



Bypass lane dimensions for Type B and C accesses on an urban CTH.

## Appendix B Vision Corner Diagram



**REFER TO APPENDIX C FOR STANDARDS**

### Appendix C Sight Distance Diagram

VISION TRIANGLE STANDARDS				
	Posted Speed Limit			
	60 MPH or Greater	55 MPH	50 – 45 MPH	40 MPH or Less
Major Intersecting Highway or Road, Distance "A"	600 feet	500 feet	400 feet	300 feet
Minor Intersecting Highway or Road, Distance "B"	175 feet	160 feet	150 feet	120 feet

Sight distance shall be measured from a point 15 feet from the near edge of the pavement of the through-lane using the eye height shown in the above table and object height of 3.5 feet.

Design site distance as shown in the above table shall be used in lieu of minimum distance shown whenever it is possible to do so in the opinion of the Commissioner.

Site distance values for single unit or semi-trailer vehicles shall be used when traffic volumes for that type of vehicles is predicted to exceed 25.

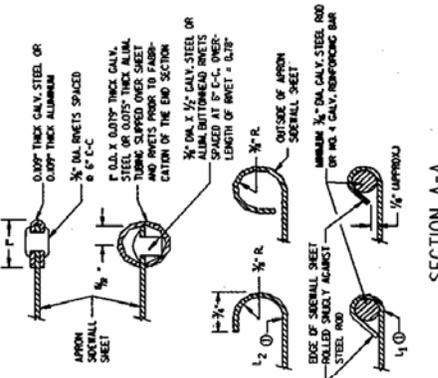
# APPENDIX D

**REINFORCED CONCRETE APRON ENDWALLS**  
(DIMENSIONS IN INCHES)

PIPE DIA.	T	A	B	C	D	E	C	APPROX. SLOPE
12	4	24	48 1/2	72 1/2	24	2	3	3 TO 1
15	6	36	72	108	36	3	4	3 TO 1
18	8	48	96	144	48	4	5	3 TO 1
21	10	60	120	180	60	5	6	3 TO 1
24	12	72	144	216	72	6	7	3 TO 1
27	14	84	168	252	84	7	8	3 TO 1
30	16	96	192	288	96	8	9	3 TO 1
33	18	108	216	324	108	9	10	3 TO 1
36	20	120	240	360	120	10	11	3 TO 1
39	22	132	264	396	132	11	12	3 TO 1
42	24	144	288	432	144	12	13	3 TO 1
45	26	156	312	468	156	13	14	3 TO 1
48	28	168	336	504	168	14	15	3 TO 1
51	30	180	360	540	180	15	16	3 TO 1
54	32	192	384	576	192	16	17	3 TO 1
57	34	204	408	612	204	17	18	3 TO 1
60	36	216	432	648	216	18	19	3 TO 1
63	38	228	456	684	228	19	20	3 TO 1
66	40	240	480	720	240	20	21	3 TO 1
69	42	252	504	756	252	21	22	3 TO 1
72	44	264	528	792	264	22	23	3 TO 1
75	46	276	552	828	276	23	24	3 TO 1
78	48	288	576	864	288	24	25	3 TO 1
81	50	300	600	900	300	25	26	3 TO 1
84	52	312	624	936	312	26	27	3 TO 1
87	54	324	648	972	324	27	28	3 TO 1
90	56	336	672	1008	336	28	29	3 TO 1

**METAL APRON ENDWALLS**  
(DIMENSIONS IN INCHES)

PIPE DIA.	A	B	H	L	L1	L2	V	APPROX. SLOPE
12	6	6	21	12	17 1/2	24	27 TO 18	3 TO 1
15	8	8	28	16	24	30	30 TO 20	3 TO 1
18	10	10	35	20	31 1/2	36	33 TO 22	3 TO 1
21	12	12	42	24	39	42	36 TO 24	3 TO 1
24	14	14	49	28	46 1/2	48	39 TO 26	3 TO 1
27	16	16	56	32	54	54	42 TO 28	3 TO 1
30	18	18	63	36	61 1/2	60	45 TO 30	3 TO 1
33	20	20	70	40	69	66	48 TO 32	3 TO 1
36	22	22	77	44	76 1/2	72	51 TO 34	3 TO 1
39	24	24	84	48	84	78	54 TO 36	3 TO 1
42	26	26	91	52	91 1/2	84	57 TO 38	3 TO 1
45	28	28	98	56	99	90	60 TO 40	3 TO 1
48	30	30	105	60	106 1/2	96	63 TO 42	3 TO 1
51	32	32	112	64	114	102	66 TO 44	3 TO 1
54	34	34	119	68	121 1/2	108	69 TO 46	3 TO 1
57	36	36	126	72	129	114	72 TO 48	3 TO 1
60	38	38	133	76	136 1/2	120	75 TO 50	3 TO 1
63	40	40	140	80	144	126	78 TO 52	3 TO 1
66	42	42	147	84	151 1/2	132	81 TO 54	3 TO 1
69	44	44	154	88	159	138	84 TO 56	3 TO 1
72	46	46	161	92	166 1/2	144	87 TO 58	3 TO 1
75	48	48	168	96	174	150	90 TO 60	3 TO 1
78	50	50	175	100	181 1/2	156	93 TO 62	3 TO 1
81	52	52	182	104	189	162	96 TO 64	3 TO 1
84	54	54	189	108	196 1/2	168	99 TO 66	3 TO 1
87	56	56	196	112	204	174	102 TO 68	3 TO 1
90	58	58	203	116	211 1/2	180	105 TO 70	3 TO 1



SECTION A-A

**GENERAL NOTES**

DETAILS OF CONSTRUCTION MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PRESENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

CONCRETE APRON ENDWALLS MAY NOT BE USED WITH GALVANIZED STEEL APRON SHEETS UNLESS THE APRON SHEETS ARE GALVANIZED AFTER INSTALLATION.

ALUMINUM APRON ENDWALLS SHALL NORMALLY BE INSTALLED ON CULVERT PIPE OF THE SAME METAL.

ALL THREE PIECE STEEL APRON ENDWALLS FOR 60" DIAMETER PIPE AND ALUMINUM APRON ENDWALLS FOR 60" DIAMETER PIPE SHALL BE ATTACHED TO CENTER PANELS WITH GALVANIZED NUTS AND BOLTS FOR STEEL ENDS AND ALUMINUM NUTS AND BOLTS FOR ALUMINUM ENDS.

LAP SEAMS SHALL BE TIGHTLY JOINED BY GALVANIZED NUTS OR BOLTS FOR STEEL ENDS AND ALUMINUM NUTS AND BOLTS FOR ALUMINUM ENDS. THE REINFORCED EDGES AND CENTER PANEL SEAMS SHALL BE FURTHER REINFORCED WITH GALVANIZED NUTS AND BOLTS FOR STEEL ENDS AND ALUMINUM NUTS AND BOLTS FOR ALUMINUM ENDS.

WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAP ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

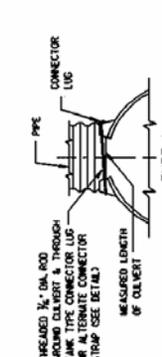
FOR PIPE SIZES UP TO 60" DIAMETER, A HOT ROLLED EDGE MAY BE USED INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

APRON ENDWALLS FOR CULVERT PIPE

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED \_\_\_\_\_ DATE \_\_\_\_\_  
DIST. HIGHWAY DEVELOPMENT ENGINEER

S.D.D. 8 F 1-11



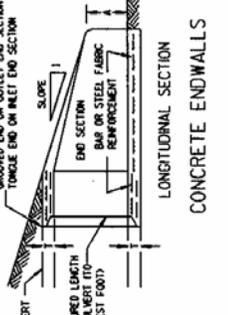
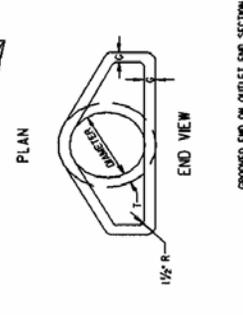
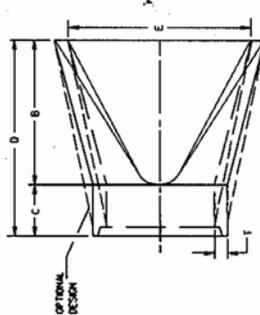
**CONNECTION DETAILS**

NOTE: DAMPED BAND FITS OVER OUTSIDE OF ENDWALL AND CORRUGATED BAND FITS INSIDE ENDWALL. DAMPED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

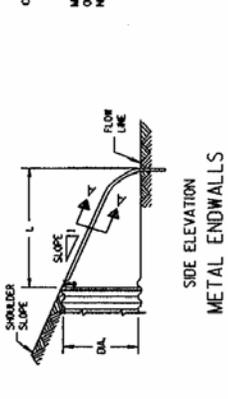
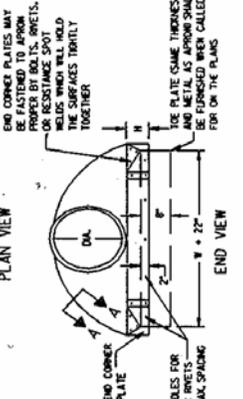
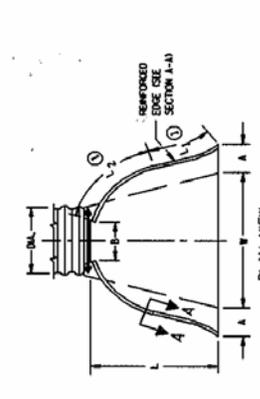
FOR CIRCUMFERENTIALLY CORRUGATED PIPE USE ENDWALL CONNECTION DETAILS 1, 2, 3 OR 5 AS APPLICABLE.

FOR HELICALLY CORRUGATED PIPE USE ENDWALL CONNECTION DETAILS 1, 2 OR 5.

FOR HELICALLY CORRUGATED PIPES WITH TWO ENDWALLS USE ENDWALL CONNECTION DETAILS 1, 2 OR 5.



LONGITUDINAL SECTION CONCRETE ENDWALLS



SIDE ELEVATION METAL APRON ENDWALLS