§ 652.11 Planning.

Federally aided bicycle and pedestrian projects implemented within urbanized areas must be included in the transportation improvement program/annual (or biennial) element unless excluded by agreement between the State and the metropolitan planning organization.

§ 652.13 Design and construction criteria.

(a) The American Association of State Highway and Transportation Officials' ''Guide for Development of New Bicycle Facilities, 1981'' (AASHTO Guide) or equivalent guides developed in cooperation with State or local officials and acceptable to the division office of the FHWA, shall be used as standards for the construction and design of bicycle routes. Copies of the AASHTO Guide may be obtained from the American Association of State Highway and Transportation Officials, 444 North Capitol Street, NW., Suite 225, Washington, DC 20001.

(b) Curb cuts and other provisions as may be appropriate for the handicapped are required on all Federal and Federal-aid projects involving the provision of curbs or sidewalks at all pedestrian crosswalks.

PART 655—TRAFFIC OPERATIONS

Subparts A–C [Reserved]

Subpart D—Traffic Surveillance and Control

Sec.

Subpart E [Reserved]

Subpart F—Traffic Control Devices on Federal-Aid and Other Streets and Highways

Subpart G [Reserved]

AUTHORITY: 23 U.S.C. 101(a), 104, 109(d), 114(a), 217, 315, and 402(a); 23 CFR 1.32 and; 49 CFR 1.48(b).

Subparts A–C [Reserved]

Subpart D—Traffic Surveillance and Control

SOURCE: 49 FR 8436, Mar. 7, 1984, unless otherwise noted.

EFFECTIVE DATE NOTE: At 66 FR 1453, Jan. 8, 2001, subpart D of part 655, consisting of §§ 655.401, 655.403, 655.405, 655.407, 655.409, and 655.411, was removed and reserved, effective Feb. 7, 2001. At 66 FR 9198, Feb. 7, 2001, the effective date was delayed until Apr. 8, 2001.

§ 655.401 Purpose.

The purpose of this regulation is to provide policies and procedures relating to Federal-aid requirements of traffic surveillance and control system projects.

§ 655.403 Traffic surveillance and control systems.

(a) A traffic surveillance and control system is an array of human, institutional, hardware and software components designed to monitor and control traffic, and to manage transportation on streets and highways and thereby improve transportation performance, safety, and fuel efficiency.

(b) Systems may have various degrees of sophistication. Examples include, but are not limited to, the following systems: traffic signal control, freeway surveillance and control, and highway advisory radio, reversible lane control, tunnel and bridge control, adverse weather advisory, remote control of movable bridges, and priority lane control.

(c) Systems start-up is the process necessary to assure the surveillance and control project operates effectively. The start-up process is accomplished in a limited time period immediately after the system is functioning

and consists of activities to achieve optimal performance. These activities include evaluation of the hardware, software and system performance on traffic; completion and updating of basic data needed to operate the system; and any modifications or corrections needed to improve system performance.

§ 655.405 Policy.

Implementation and efficient utilization of traffic surveillance and control systems are essential to optimize transporation systems efficiency, fuel conservation, safety, and environmental quality.

§ 655.407 Eligibility.

Traffic surveillance and control system projects are an integral part of Federal-aid highway construction and all phases of these projects are eligible for funding with appropriate Federal-aid highway funds. The degree of sophistication of any system must be in scale with needs and with the availability of personnel and budget resources to operate and maintain the system.

§ 655.409 Traffic engineering analysis.

Traffic surveillance and control system projects shall be based on a traffic engineering analysis. The analysis should be on a scale commensurate with the project scope. The basic elements of the analysis are:

(a) *Preliminary analysis.* The Preliminary Traffic Engineering Analysis should determine: The area to be controlled; transportation characteristics; objectives of the system; existing systems resources (including communications); existing personnel and budget resources for the maintenance and operation of the system.

(b) *Alternative systems analysis.* Alternative systems should be analyzed as applicable. For the alternatives considered, the analysis should encompass incremental initial costs; required maintenance and operating budget and personnel resources; and expected benefits. Improved use of existing resources, as applicable, should be considered also.

(c) *Procurement and system start-up analysis.* Procurement and system start-up methods should be considered in the analysis. Federal-aid laws, regulations, policies, and procedures provide considerable flexibility to accommodate the special needs of systems procurement.

(d) *Special features analysis.* Unique or special features including special components and functions (such as emergency vehicle priority control, redundant hardware, closed circuit television, etc.) should be specifically evaulated in relation to the objectives of the system and incremental initial costs, operating costs, and resource requirements.

(e) *Analysis of laws and ordinances.* Existing traffic laws, ordinances, and regulations relevant to the effective operation of the proposed system shall be reviewed to ensure compatibility.

(f) *Implementation plan.* The final element in the traffic engineering analysis shall be an implementation plan. It shall include needed legislation, systems design, procurement methods, construction management procedures including acceptance testing, system start-up plan, operation and maintenance plan. It shall include necessary institutional arrangements and the dedication of needed personnel and budget resources required for the proposed system.

(Approved by the Office of Management and Budget under control number 2125–0512)

[49 FR 8436, Mar. 7, 1984, as amended at 59 FR 33910, July 1, 1994]

§ 655.411 Project administration.

(a) Prior to authorization of Federal-aid highway funds for construction, there should be a commitment to the operations plan (see § 655.409 (f)).

(b) The plans, specifications and estimates submittal shall include a total system acceptance plan.

(c) Project approval actions are delegated to the Division Administrator. Approval actions for traffic surveillance and control system projects costing over $1,000,000 are subject to review by the Regional Administrator prior to approval of plans, specifications, and estimates.

(d) System start-up is an integral part of a surveillance and control project.

(1) Costs for system start-up, over and above those attributable to routine

maintenance and operation, are eligible for Federal-aid funding.

(2) Final project acceptance should not occur until after completion of the start-up phase.

Subpart E [Reserved]

Subpart F—Traffic Control Devices on Federal-Aid and Other Streets and Highways

SOURCE: 48 FR 46776, Oct. 14, 1983, unless otherwise noted.

§ 655.601 Purpose.

To prescribe the policies and procedures of the Federal Highway Administration (FHWA) to obtain basic uniformity of traffic control devices on all streets and highways in accordance with the following references that are approved by the FHWA for application on Federal-aid projects:

(a) Manual on Uniform Traffic Control Devices (MUTCD), 2000 Millennium Edition, FHWA dated December, 2000. This publication is incorporated by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51 and is on file at the Office of the FEDERAL REGISTER, 800 North Capitol Street, NW., Suite 700, Washington, DC. It is available for inspection and copying at FHWA, 400 Seventh Street, SW., Room 3408, Washington, DC 20590, as provided in 49 CFR part 7. The text is also available from the FHWA Office of Transportation Operations' web site at: *http://mutcd.fhwa.dot.gov*.

(b) Standard Alphabets for Highway Signs, FHWA, 1966 Edition, Reprinted May 1972. (This publication is incorporated by reference and is on file at the Office of the Federal Register in Washington, DC. This document is available for inspection and copying as provided in 49 CFR part 7, appendix D).

(c) Guide to Metric Conversion, AASHTO, 1993. This publication is incorporated by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51 and is on file at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC. This document is available for inspection as provided in 49 CFR part 7. It may be purchased from the American Association of State Highway and Transportation Officials, Suite 249, 444 North Capitol Street, NW., Washington, DC 20001.

(d) Traffic Engineering Metric Conversion Factors, 1993—Addendum to the Guide to Metric Conversion, AASHTO, October 1993. This publication is incorporated by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51 and is on file at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC. This document is available for inspection as provided in 49 CFR part 7. It may be purchased from the American Association of State Highway and Transportation Officials, Suite 249, 444 North Capitol Street, NW., Washington, DC 20001.

[51 FR 16834, May 7, 1986, as amended at 60 FR 18521, Apr. 11, 1995; 61 FR 29626, June 11, 1996; 62 FR 1373, Jan. 9, 1997; 63 FR 8351, Feb. 19, 1998; 63 FR 33549, June 19, 1998; 64 FR 33753, June 24, 1999; 65 FR 13, Jan. 3, 2000; 65 FR 78958, Dec. 18, 2000]

§ 655.602 Definitions.

The terms used herein are defined in accordance with definitions and usages contained in the MUTCD and 23 U.S.C. 101(a).

§ 655.603 Standards.

(a) *National MUTCD*. The MUTCD approved by the Federal Highway Administrator is the national standard for all traffic control devices installed on any street, highway, or bicycle trail open to public travel in accordance with 23 U.S.C 109(d) and 402(a). The national MUTCD is specifically approved by the FHWA for application on any highway project in which Federal highway funds participate and on projects in federally administered areas where a Federal department or agency controls the highway or supervises the traffic operations.

(b) *State or other Federal MUTCD*. (1) Where State or other Federal agency MUTCDs or supplements are required, they shall be in substantial conformance with the national MUTCD. Changes to the national MUTCD issued by the FHWA shall be adopted by the States or other Federal agencies within

2 years of issuance. The FHWA Regional Administrator has been delegated the authority to approve State MUTCDs and supplements.

(2) The Direct Federal Program Administrator has been delegated the authority to approve other Federal agency MUTCDs with the concurrence of the Office of Traffic Operations. States and other Federal agencies are encouraged to adopt the national MUTCD as their official Manual on Uniform Traffic Control Devices.

(c) *Color specifications.* Color determinations and specifications of sign and pavement marking materials shall conform to requirements of the FHWA Color Tolerance Charts.[2] An alternate method of determining the color of retroreflective sign material is provided in the appendix.

(d) *Compliance*—(1) *Existing highways.* Each State, in cooperation with its political subdivisions, and Federal agencies shall have a program as required by Highway Safety Program Standard Number 13, Traffic Engineering Services (23 CFR 1204.4) which shall include provisions for the systematic upgrading of substandard traffic control devices and for the installation of needed devices to achieve conformity with the MUTCD.

(2) *New or reconstructed highways.* Federal-aid projects for the construction, reconstruction, resurfacing, restoration, or rehabilitation of streets and highways shall not be opened to the public for unrestricted use until all appropriate traffic control devices, either temporary or permanent, are installed and functioning properly. Both temporary and permanent devices shall conform to the MUTCD.

(3) *Construction area activities.* All traffic control devices installed in construction areas using Federal-aid funds shall conform to the MUTCD. Traffic control plans for handling traffic and pedestrians in construction zones and for protection of workers shall conform to the requirements of 23 CFR part 630, subpart J, Traffic Safety in Highway and Street Work Zones.

[2] Available for inspection from the Office of Traffic Operations, Federal Highway Administration, 400 Seventh Street, SW., Washington, DC 20590.

(4) *MUTCD changes.* The FHWA may establish target dates for achieving compliance with changes to specific devices in the MUTCD.

(e) *Specific information signs.* Standards for specific information signs are contained in the MUTCD.

[48 FR 46776, Oct. 14, 1983, as amended at 51 FR 16834, May 7, 1986]

§ 655.604 Achieving basic uniformity.

(a) *Programs.* Programs for the orderly and systematic upgrading of existing traffic control devices or the installation of needed traffic control devices on or off the Federal-aid system should be based on inventories made in accordance with 23 CFR 1204.4, Highway Safety Program Standards. These inventories provide the information necessary for programming traffic control device upgrading projects.

(b) *Inventory.* An inventory of all traffic control devices is required by Highway Safety Program Standard Number 13, Traffic Engineering Services (23 CFR 1204.4). Highway planning and research funds and highway related safety grant program funds may be used in statewide or systemwide studies or inventories. Also, metropolitan planning (PL) funds may be used in urbanized areas provided the activity is included in an approved unified work program.

§ 655.605 Project procedures.

(a) *Federal-aid highways.* Federal-aid projects involving the installation of traffic control devices shall follow procedures as established in 23 CFR part 630, subpart A, Federal-Aid Programs Approval and Project Authorization. Simplified and timesaving procedures are to be used to the extent permitted by existing policy.

(b) *Off-system highways.* Certain federally funded programs are available for installation of traffic control devices on streets and highways that are not on the Federal-aid system. The procedures used in these programs may vary from project to project but, essentially, the guidelines set forth herein should be used.

§ 655.606 Higher cost materials.

The use of signing, pavement marking, and signal materials (or equipment) having distinctive performance characteristics, but costing more than other materials (or equipment) commonly used may be approved by the FHWA Division Administrator when the specific use proposed is considered to be in the public interest.

§ 655.607 Funding.

(a) *Federal-aid highways.* (1) Funds apportioned or allocated under 23 U.S.C. 104(b) are eligible to participate in projects to install traffic control devices in accordance with the MUTCD on newly constructed, reconstructed, resurfaced, restored, or rehabilitated highways, or on existing highways when this work is classified as construction in accordance with 23 U.S.C. 101(a). Federal-aid highway funds for eligible pavement markings and traffic control signalization may amount to 100 percent of the construction cost. Federal-aid highway funds apportioned or allocated under other sections of 23 U.S.C. are eligible for participation in improvements conforming to the MUTCD in accordance with the provisions of applicable program regulations and directives.

(2) Traffic control devices are eligible, in keeping with paragraph (a)(1) of this section, provided that the work is classified as construction in accordance with 23 U.S.C. 101(a) and the State or local agency has a policy acceptable to the FHWA Division Administrator for selecting traffic control devices material or equipment based on items such as cost, traffic volumes, safety, and expected service life. The State's policy should provide for cost-effective selection of materials which will provide for substantial service life taking into account expected and necessary routine maintenance. For these purposes, effectiveness would normally be measured in terms of durability, service life and/or performance of the material. Specific projects including material or equipment selection shall be developed in accordance with this policy. Proposed work may be approved on a project-by-project basis when the work is (i) clearly warranted, (ii) on a Federal-aid system, (iii) clearly identified by site, (iv) substantial in nature, and (v) of sufficient magnitude at any given location to warrant Federal-aid participation as a construction item.

(3) The method of accomplishing the work will be in accordance with 23 CFR part 635, subpart A, Contract Procedures.

(b) *Off-system highways.* Certain Federal-aid highway funds are eligible to participate in traffic control device improvement projects on off-system highways. In addition, Federal-aid highway funds apportioned or allocated in 23 U.S.C. are eligible for the installation of traffic control devices on any public road not on the Federal-aid system when the installation is directly related to a traffic improvement project on a Federal-aid system route.

APPENDIX TO SUBPART F OF PART 655—ALTERNATE METHOD OF DETERMINING THE COLOR OF RETROREFLECTIVE SIGN MATERIALS

1. The FHWA Color Tolerance Charts provide that conventional color measuring instruments such as spectrophotometers and tristimulus photoelectric colorimeters should not be used for measurement of retroreflective material colors and that such materials should be evaluated visually using the Color Tolerance Charts and paying strict attention to prescribed illumination and viewing conditions.

2. As an alternate to visual testing, the diffuse day color of retroreflective sign material may be determined in accordance with ASTM E 97, ''Standard Method of Test for 45-Degree, 0-Degree Directional Reflectance of Opaque Specimens by Filter Photometry.'' Geometric characteristics must be confined to illumination incident within 10 degrees of, and centered about, a direction of 45 degrees from the perpendicular to the test surface; viewing is within 15 degrees of, and centered about, the perpendicular to the test surface. Conditions of illumination and observation must not be interchanged.

3. Standards to be used for reference are the Munsell Papers designated in Table 1 or Table II, attached. The papers must be recently calibrated on a spectrophotometer. Acceptable test instruments are:

a. Gardner Multipurpose Reflectometer or Model XL 20 Color Difference Meter,

b. Gardner Model Ac–2a or XL 30 Color Difference Meter,

c. Meeco Model V Colormaster,

d. Hunter lab D25 Color Difference Meter, or

e. Approved equal.

4. Average performance sheeting is identified as Types I and II sheeting and high performance sheeting is identified as Types III and IV sheeting in Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects[3] (FP–79, Section 633).

TABLE I—COLOR SPECIFICATION LIMITS AND REFERENCE STANDARDS, TYPES I AND II SHEETING

Color	Chromaticity coordinates[1] (corner points)								Reflectance limits (percent Y) Y		Reference[3] standard (munsell papers)
	1		2		3		4				
	x	y	x	y	x	y	x	y	Minium	Maximum	
White[2]	.305	.290	.350	.342	.321	.361	.276	.308	35	—	6.3Gy 6.77/0.8.
Red	.602	.317	.664	.336	.644	.356	.575	.356	8	12	8.2R 3.78/14.0.
Orange	.535	.375	.607	.393	.582	.417	.535	.399	18	30	2.5YR 5.5/14.0
Brown	.445	.353	.604	.396	.556	.443	.445	.386	4	9	5.OYR 3/6.
Yellow	.482	.450	.532	.465	.505	.494	.475	.485	29	45	1.25Y 6/12.
Green	.130	.369	.180	.391	.155	.460	.107	.439	3.5	9	0.65BG 2.84/8.45.
Blue	.147	.075	.176	.091	.176	.151	.106	.113	1.0	4	5 8PB 1.32/6.8.

[1] The four pairs of chromaticity coordinates determine the acceptable color in terms of the CIE 1931 standard colorimetric system measured with standard illumination source C.
[2] Silver white is an acceptable color designation.
[3] Available from Munsell Color Company. 2441 Calvert Street, Baltimore. Maryland 21218.

TABLE II—COLOR SPECIFICATION LIMITS AND REFERENCE STANDARDS, TYPES III AND IV SHEETING

Color	Chromaticity Coordinates[1] (corner points)								Reflectance limits (percent Y) Y		Reference[3] standard (munsell papers)
	1		2		3		4				
	x	y	x	y	x	y	x	y	Min.	Max.	
White[2]	.303	287	.368	.353	.340	.380	.274	.316	27	.....	5.0PB 7/1.
Red	.613	.297	.708	.292	.636	.364	.558	.352	2.5	11	7.5R 3/12.
Orange	.550	.360	.630	.370	.581	.418	.516	.394	14	30	2.5YR 5.5/14.
Yellow	.498	.412	.557	.442	.479	.520	.438	.472	15	40	1.25Y 6/12.
Green	.030	.380	.166	.346	.286	.428	.201	.776	3	8	10G 3/8
Blue	.144	.030	.244	.202	.190	.247	.066	.208	1	10	5.8PB 1.32/6.8.

[1] The four pairs of chromaticity coordinates determine the acceptable color in terms of the CIE 1931 standard colorimetric system measured with standard illumination source C.
[2] Silver white is an acceptable color designation.
[3] Available from Munsell Color Company, 2441 Calvert Street, Baltimore, Maryland 21218.

Subpart G [Reserved]

PART 656—CARPOOL AND VANPOOL PROJECTS

Sec.
656.1 Purpose.
656.3 Policy.
656.5 Eligibility.
656.7 Determination of an exception.

AUTHORITY: 23 U.S.C. 146 and 315; sec. 126 of the Surface Transportation Assistance Act of 1978, Pub. L. 95–599, 92 Stat. 2689; 49 CFR 1.48(b).

SOURCE: 47 FR 43024, Sept. 30, 1982, unless otherwise noted.

§ 656.1 Purpose.

The purpose of this regulation is to prescribe policies and general procedures for administering a program of ridesharing projects using Federal-aid primary, secondary, and urban system funds.

§ 656.3 Policy.

Section 126(d) of the Surface Transportation Assistance Act of 1978 declares that special effort should be made to promote commuter modes of transportation which conserve energy, reduce pollution, and reduce traffic congestion.

[3] This document is available for inspection and copying as prescribed in 49 CFR part 7, appendix D.