Maryland Department of Transportation

State Highway Administration
Baltimore, Maryland
Invitation for Bids

Contract No. MO4295168

F.A.P No. ES-5035(4)E

ECONOMIC RECOVERY PROJECT

MD 187

Safety and Resurfacing; From 150' South of Center Drive to North Brook Lane

Minority Business Enterprises are encouraged to respond to this Solicitation Notice.

The State Highway Administration will only be responsible for the completeness of documents obtained directly from the State Highway Administration Cashier's Office.
Failure to attach all addenda may cause the bid to be irregular.

VENDOR I.D. NUMBER

_____

S.H.A. USE ONLY

Maryland Department of Transportation

State Highway Administration
Baltimore, Maryland
Invitation for Bids

Montgomery County

Contract No. MO4295168

F.A.P No. ES-5035(4)E

ECONOMIC RECOVERY PROJECT

MD 187

Safety and Resurfacing; From 150' South of Center Drive to North Brook Lane

Montgomery County

NOTICE TO BIDDERS

A Pre-Bidding Session will not be held for this project.

NOTICE TO CONTRACTORS

The Specifications utilized with this bid book are those issued by the Maryland State Highway Administration dated <u>July 2008</u>.

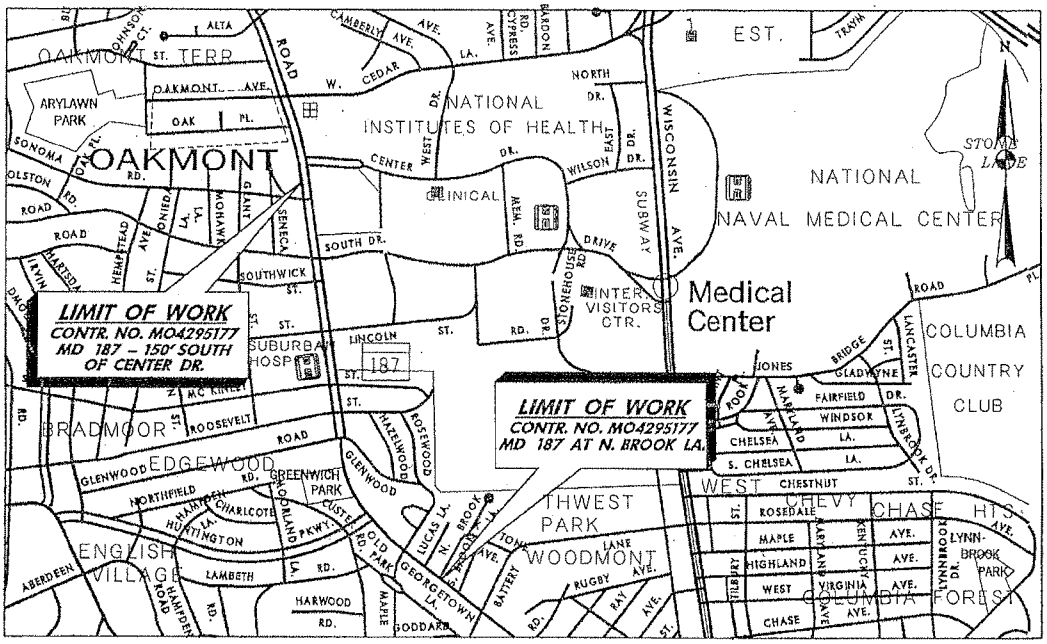
Copies may be purchased at:

Maryland State Highway Administration
Cashier's Office
211 East Madison Street
Baltimore, Maryland 21202
Phone 410-545-8490

The purchase price of the July 2008 Specifications Book is $30.00. When material is mailed an additional fee of $5.50 will be charged.

SHA CONTRACT NO.: MO4295168

F.A.P. NO.: ES-5035(4)E



MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DR. TO N. BROOK LA.

SCALE: NONE

LOCATION MAP
0.84Miles

MONTGOMERY COUNTY

"I/We hereby certify that any clearing, grading construction and/or development will be done pursuant to this plan and that any responsible personnel involved in the construction project shall have successfully completed a Maryland Department of the Environment training program for the control of erosion and sediment before beginning the project."

"I hereby authorize the right of entry for periodic on-site evaluation by State, Department of the Environment, compliance inspectors."

Elderly and Handicapped Facilities: The design of the Project has incorporated facilities for the elderly and handicapped in compliance with State and Federal legislation.

REVIEWED AND APPROVAL RECOMMENDED

12/24/08

DISTRICT ENGINEER **DATE**

APPROVAL RECOMMENDED

Kirk G. McCall 1/15/09

DIRECTOR, OFFICE OF HIGHWAY DEVELOPMENT **DATE**

APPROVED

1/21/09

DEPUTY ADMINISTRATOR/CHIEF ENGINEER FOR PLANNING, ENGINEERING REAL ESTATE AND ENVIRONMENTAL **DATE**

DESIGN DESIGNATION CHART

DESIGN DESIGNATION		
Control\Years	2010	2030
Average Daily Traffic (A.D.T.)	43,400	50,400
Design Hourly Volume (D.H.V.)	8%	8%
Directional Distribution	62%	62%
% Trucks – A.D.T.	5%	5%
% Trucks – D.H.V.	9%	9%
Design Speed	50 MPH	
Functional Classifications	Principal Arterial	
Controls of Access	None	
Intensity of Development	Urban	
Terrain	Flat	
Anticipated Posted Speed	30/40 MPH	

SPECIAL NOTICE TO CONTRACTORS

Funding for this project is contingent on the passage of a federal infrastructure stimulus bill. Award of this contract will be conditioned upon the availability of federal funds and the ability of this contract to meet any special requirements of the final authorization bill. If either of these conditions cannot be met, the project may be cancelled.

Where Contract No. MO4295177 appears in the Contract Documents, it shall be Construed as MO4295168.

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NOTICE TO ALL HOLDERS OF THIS CONTRACT DOCUMENT

NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 350 IMPLEMENTATION SCHEDULE FOR DEVICES USED IN THE MAINTENANCE OF TRAFFIC

Except as otherwise specified in this Section, all items for the maintenance of traffic, including those listed under the following categories, shall be crashworthy in conformance with Level 3 or other Level as specified by the Engineer in conformance with the safety crash testing and performance criteria published in the National Cooperative Highway Research Program (NCHRP) Report 350, "Recommended Procedures for the Safety Performance Evaluation of Highway Features." When conformance with NCHRP Report 350 is required, the Contractor shall provide the Engineer with the manufacturers' certifications that the devices comply with the specified criteria.

Unless specifically waived by an attachment to these Contract Provisions, devices must be approved by the Office of Traffic and Safety.

Category 1 Devices

These devices are cones, tubular markers, flexible delineator posts, and drums, all without any accessories or attachments, which are used for channelization and delineation.

Category 2 Devices

These devices are Type I, II, and III barricades; portable sign supports with signs; intrusion alarms; and drums, vertical panels, and cones, all with accessories or attachments.

Category 3 Devices

(a) Truck Mounted Attenuators (TMAs).

(b) Temporary Barrier.

- **(1)** Concrete Barrier.
- **(2)** Traffic Barrier W Beam and Water Filled Barrier.

(c) Temporary End Treatments.

Category 4 Devices

These devices are area lighting supports, arrow panels, and portable variable message signs that are usually portable or trailer-mounted.

WORK ZONE DEVICES	IMPLEMENTATION SCHEDULE TO CONFORM TO NCHRP REPORT 350 CRITERIA
CATEGORY 1 Cones, tubular markers, flexible delineator posts, and drums (all without any accessories or attachments)	All devices shall conform to NCHRP Report 350 criteria.
CATEGORY 2 Type I, II, and III barricades; portable signs supports with signs; intrusion alarms; and drums, vertical panels, and cones (all with accessories or attachments)	All devices shall conform to NCHRP Report 350 criteria.
CATEGORY 3 (a) Truck Mounted Attenuators (TMA) (b) Temporary Barriers (1) Concrete Barrier (2) Traffic Barrier W Beam and Water Filled Barrier (c) Temporary End Treatments	All devices shall conform to NCHRP Report 350 criteria.
CATEGORY 4 Portable trailer mounted devices including area lighting supports, arrow panels, and changeable message signs	The Contractor may use devices that do not conform to NCHRP Report 350 criteria, until compliance dates are established. Use of these devices shall comply with the provisions of Part 6 of the MUTCD.

OCCUPYING WETLANDS

The Contractor is hereby alerted to the importance of preserving wetland areas. The Administration, in conjunction with the various environmental agencies, has developed these Contract Documents so as to minimize or eliminate disturbance and damage to existing wetland areas. In order to accomplish this, the following must be rigidly adhered to:

(a) Prior to performing any work on the project, the areas of wetland will be identified and marked as directed by the Administration. All personnel of the Contractor or sub-contractors shall be alerted to these designated areas.

(b) The Contractor or sub-contractors shall not impact any wetland or waterway, whether it be permanently or temporarily unless otherwise stipulated in the permit application and approved as an authorized action by the appropriate regulatory agency. No fill shall be placed in these areas without a permit.

(c) If a Contractor or sub-contractor has to impact a wetland or waterway that is not covered by an existing wetland permit, they shall immediately notify the Engineer. The Engineer will notify the Environmental Programs Division to determine the extent of any permit modification. At that time the Environmental Programs Division will request a permit modification or submit a permit application.

(d) If the Contractor impacts any wetland or waterway for which they do not have a wetland permit, they shall be responsible for restoring the wetland areas and possibly mitigating the wetland impacts to the full satisfaction of the environmental agencies, which could include monetary compensation.

(e) The cost of restoration and mitigation of the impacted areas shall be at no additional cost to the Administration.

The importance of not abusing the wetland areas cannot be overemphasized. Abuse of wetland areas could jeopardize the operation of the total Contract and could be cause for a shut-down. If a shut-down occurs because of the Contractor's failure to secure the required permits (i.e. the Contractor’s method of work includes impacts not approved by previously acquired permits), the Contractor’s negligence or operations, all costs and damages to the Contractor and to the State will be at no additional cost to the Administration. Noncompliance with these requirements will not be considered for an extension of Contract time.

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ATTACHMENTS

A. Employment Preference for Appalachian Contracts (included in Appalachian contracts only)

I. GENERAL

1. These contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.

3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.

4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:

Section I, paragraph 2;
Section IV, paragraphs 1, 2, 3, 4, and 7;
Section V, paragraphs 1 and 2a through 2g.

5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the DOL, or the contractor's employees or their representatives.

6. **Selection of Labor:** During the performance of this contract, the contractor shall not:

a. discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment A), or

b. employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

II. NONDISCRIMINATION

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $10,000 or more.)

1. **Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630 and 41 CFR 60) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the State highway agency (SHA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.

b. The contractor will accept as his operating policy the following statement:

> "It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, preapprenticeship, and/or on-the-job training."

2. **EEO Officer:** The contractor will designate and make known to the SHA contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.

3. **Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. **Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minority groups in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)

c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.

5. **Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.

6. **Training and Promotion:**

a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

7. **Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:

a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.

b. The contractor will use best efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the SHA and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The DOL has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the SHA.

8. **Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.

b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 23, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from SHA personnel.

c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.

9. **Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the SHA and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women;

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and

(4) The progress and efforts being made in securing the services of DBE subcontractors or subcontractors with meaningful minority and female representation among their employees.

b. The contractors will submit an annual report to the SHA each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. If on-thejob training is being required by special provision, the contractor will be required to collect and report training data.

III. NONSEGREGATED FACILITIES

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $10,000 or more.)

a. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.

b. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).

c. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of $10,000 or more and that it will retain such certifications in its files.

IV. PAYMENT OF PREDETERMINED MINIMUM WAGE

(Applicable to all Federal-aid construction contracts exceeding $2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempt.)

1. **General:**

a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less often than once a week and without subsequent deduction or rebate on any account [except such payroll deductions as are permitted by regulations (29 CFR 3) issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c)] the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV

and the DOL poster (WH-1321) or Form FHWA-1495) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also, for the purpose of this Section, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraphs 4 and 5 of this Section IV.

b. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed.

c. All rulings and interpretations of the Davis-Bacon Act and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

2. **Classification:**

a. The SHA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.

b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:

(1) the work to be performed by the additional classification requested is not performed by a classification in the wage determination;

(2) the additional classification is utilized in the area by the construction industry;

(3) the proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and

(4) with respect to helpers as defined in Section IV.4(c), when such a classification prevails in the area in which the work is performed.

c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the DOL, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. Said Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary

e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

3. **Payment of Fringe Benefits:**

a. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor or subcontractors, as appropriate, shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly case equivalent thereof.

b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as a part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

4. **Apprentices and Trainees (Programs of the U.S. DOL) and Helpers:**

a. Apprentices:

(1) Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.

(2) The allowable ratio of apprentices to journeyman-level employees on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate listed in the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work

actually performed. Where a contractor or subcontractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

(3) Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator for the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

(4) In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

b. Trainees:

(1) Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the DOL, Employment and Training Administration.

(2) The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(3) Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which case such trainees shall receive the same fringe benefits as apprentices.

(4) In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Helpers:

Helpers will be permitted to work on a project if the helper classification is specified on an applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV.2. Any worker listed on a payroll at a helper wage rate, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

5. **Apprentices and Trainees (Programs of the U.S. DOT):**

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

6. **Withholding:**

The SHA shall upon its own action or upon written request of an authorized representative of the DOL withhold, or cause to be withheld, from the contractor or subcontractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements which is held by the same prime contractor, as much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the SHA contracting officer may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

7. **Overtime Requirements:**

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such workweek unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

8. **Violation:**

Liability for Unpaid Wages; Liquidated Damages: In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible thereof shall be liable to the affected employee for his/her unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of $10 for each calendar day on which

such employee was required or permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

9. **Withholding for Unpaid Wages and Liquidated Damages:**

The SHA shall upon its own action or upon written request of any authorized representative of the DOL withhold, or cause to be withheld, from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 8 above.

V. STATEMENTS AND PAYROLLS

(Applicable to all Federal-aid construction contracts exceeding $2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

1. **Compliance with Copeland Regulations (29 CFR 3):**

The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

2. **Payrolls and Payroll Records:**

a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.

b. The payroll records shall contain the name, social security number, and address of each such employee; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. In addition, for Appalachian contracts, the payroll records shall contain a notation indicating whether the employee does, or does not, normally reside in the labor area as defined in Attachment A, paragraph 1. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis Bacon Act, the contractor and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees, and ratios and wage rates prescribed in the applicable programs.

c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices, trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

d. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his/her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;

(2) that such laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR 3;

(3) that each laborer or mechanic has been paid not less that the applicable wage rate and fringe benefits or cash equivalent for the classification of worked performed, as specified in the applicable wage determination incorporated into the contract.

e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.

f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.

g. The contractor or subcontractor shall make the records required under paragraph 2b of this Section V available for inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

VI. RECORD OF MATERIALS, SUPPLIES, AND LABOR

1. On all Federal-aid contracts on the National Highway System, except those which provide solely for the installation of protective devices at railroad grade crossings, those which are constructed on a force account or direct labor basis, highway beautification contracts, and contracts for which the total final construction cost for roadway and bridge is less than $1,000,000 (23 CFR 635) the contractor shall:

a. Become familiar with the list of specific materials and supplies contained in Form FHWA-47, "Statement of Materials and Labor Used by Contractor of Highway Construction Involving Federal Funds," prior to the commencement of work under this contract.

b. Maintain a record of the total cost of all materials and supplies purchased for and incorporated in the work, and also of the quantities of those specific materials and supplies listed on Form FHWA-47, and in the units shown on Form FHWA-47.

c. Furnish, upon the completion of the contract, to the SHA resident engineer on Form FHWA-47 together with the data required in paragraph 1b relative to materials and supplies, a final labor summary of all contract work indicating the total hours worked and the total amount earned.

2. At the prime contractor's option, either a single report covering all contract work or separate reports for the contractor and for each subcontract shall be submitted.

VII. SUBLETTING OR ASSIGNING THE CONTRACT

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635).

a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph 1 of Section VII is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the SHA contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the SHA contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

VIII. SAFETY: ACCIDENT PREVENTION

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the SHA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

NOTICE TO ALL PERSONNEL ENGAGED ON FEDERAL-AID HIGHWAY PROJECTS

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed,

or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined not more that $10,000 or imprisoned not more than 5 years or both."

X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $100,000 or more.)

By submission of this bid or the execution of this contract, or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub.L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Pub.L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.

2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.

3. That the firm shall promptly notify the SHA of the receipt of any communication from the Director, Office of Federal Activities, EPA, indicating that a facility that is or will be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.

4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

1. **Instructions for Certification - Primary Covered Transactions:**
(Applicable to all Federal-aid contracts - 49 CFR 29)

a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.

f. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded From Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Primary Covered Transactions

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and

d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

2. **Instructions for Certification - Lower Tier Covered Transactions:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions of $25,000 or more - 49 CFR 29)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Covered Transactions:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 - 49 CFR 20)

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

MBE/DBE COMPLIANCE FIELD MEETING

A MBE/DBE compliance Field Meeting will be conducted to review the responsibilities of the Administration and the Contractor's personnel relative to MBE/DBE Compliance and documentation. The meeting will be held within two weeks after starting work on the project.

The Construction Project Engineer, who will notify the following of the date, time and location, will arrange the meeting. At least one week advanced notice will be required.

(a) Administrative Representatives.

(1) Director, Office of Equal Opportunity or Designee

(2) District Equal Opportunity Officer

(3) Regional Constructional Engineer

(4) Construction Project Engineer

(5) Construction Inspection Division Inspector

(b) Contract Representatives.

(1) Superintendent - Prime Contractor

(2) Equal Opportunity Officer - Prime Contractor

(3) Owner/Superintendent/Foreman MBE/ DBE - Subcontractor

The Construction Project Engineer and Equal Opportunity Representative will jointly conduct the meeting. The Contractor shall notify the appropriate subcontractors and ensure their attendance.

AFFIRMATIVE ACTION REQUIREMENTS
UTILIZATION OF DISADVANTAGED BUSINESS ENTERPRISES
FOR FEDERAL-AID CONTRACTS

CONTRACT GOALS

FOR THE PURPOSE OF THIS CONTRACT, A GOAL OF THIRTY PERCENT (30%) HAS BEEN ESTABLISHED FOR SOCIALLY AND ECONOMICALLY DISADVANTAGED BUSINESSES THAT ARE OWNED AND CONTROLLED BY – THOSE INDIVIDUALS WHO ARE BLACK AMERICANS, HISPANIC AMERICANS, ASIAN-PACIFIC AMERICANS, SUBCONTINENT ASIAN AMERICANS, NATIVE AMERICANS, OR WOMEN PURSUANT TO THE MARYLAND DEPARTMENT OF TRANSPORTATION (MDOT) MINORITY BUSINESS ENTERPRISE PROGRAM:

It is the policy of the Maryland Department of Transportation that disadvantaged business enterprises as defined in 49 CFR Part 26 and the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) shall have an equal opportunity to participate in the performance of the contracts financed in whole or in part with Federal funds under these agreements. Consequently, the disadvantaged business enterprise requirements of 49 CFR Part 26 and SAFETEA-LU apply to this agreement.

The bidder agrees to ensure that disadvantaged business enterprises as defined in 49 CFR Part 26 and SAFETEA-LU have an equal opportunity to participate in the performance of contracts and subcontracts financed in whole or in part with Federal funds provided under this agreement. In this regard, all bidders shall take all necessary and reasonable steps in accordance with 49 CFR Part 26 and SAFETEA-LU to ensure that disadvantaged business enterprises have an equal opportunity to compete for and perform on Federally funded contracts. The Maryland Department of Transportation and their bidders shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of this Contract.

A. GENERAL

For the purpose of these requirements, the following terms as defined below shall apply:

Administration Representative – A DBE/MBE Officer or employee of an Administration who enforces the laws and regulations pertaining to disadvantaged and minority business enterprise and contract compliance.

Affirmative Actions – Specific steps taken to eliminate discrimination and its effects, to ensure nondiscriminatory results and practices in the future, and to involve disadvantaged and minority business enterprises fully in contracts and programs.

Business Enterprises – Any legal entity which is organized in any form other than as a joint venture (e.g., sole proprietorship, partnership, corporation, etc.) to engage in lawful commercial transactions.

Certified Business – A business which by order of the Chair/MBE Advisory Council or his/hers designee, has been certified as a bona fide DBE/MBE. MDOT certification does not equate to a pre-qualification status.

DBE – Disadvantaged Business Enterprise – Reference 49 CFR, Part 26, Subpart A) a small business concern: (1) which is at least 51 percent owned by one or more socially and economically disadvantaged individuals. Where stock ownership is involved, the disadvantaged owner(s) shall own at least 51 percent of each class of voting stock and at least 51 percent of the aggregate of all classes of stock that have been issued (also applies to publicly owned businesses); and (2) whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who have ownership. In this specification the terms MBE and DBE have the same meaning.

DBE/MBE Directory – A compilation of businesses certified by MDOT as disadvantaged, minority, or socially and economically disadvantaged businesses. The directory will be published annually with quarterly supplements. It will also be provided in automated format and on the Internet to be updated as changes are made.

DBE/MBE Participation Packet – The documents submitted by the bidder or proposer pursuant to the appropriate special bid provisions. The DBE/MBE Participation Packet consists of the Certified DBE Utilization and Fair Solicitation Affidavit and the DBE Participation Schedule, both of which must be submitted with your bid or initial price proposal. The DBE Participation Packet also includes the following documents, which shall be submitted after bids or proposals are opened: Outreach Efforts Compliance Statement (MDOT-OP-018-2), DBE Subcontractor Project Participation Affidavit (MDOT-OP-019-2), MDOT Joint Venture Disclosure Affidavit (D-EEO-006), and Minority Contractor Unavailability Certificate (OOC46).

DBE/MBE Program – A program developed by MDOT to implement the requirements of Title 14, Subtitle 3 of the State Finance and Procurement Article, Annotated Code of Maryland; Title 10, Subtitle 3 of the State Finance and Procurement Article of the Annotated Code of Maryland for Leases of State-Owned Property; and 49 CFR, Part 26, Subparts A and C for all Federal Department of Transportation Financial Assistance Programs.

Director, Office of Equal Opportunity – The individual designated for the Administration's overall MBE compliance.

Joint Venture – An association of a DBE/MBE firm and one or more other firms to carry out a single, for-profit business enterprise, for which the parties combine their property, capital, efforts, skills, and knowledge, and in which the DBE/MBE is responsible for a distinct, clearly defined portion of the work of the contract and whose share in the capital contribution, control, management, risks, and profits of the joint venture are commensurate with its ownership interest.

Small Business Administration (SBA) 8(a) Certification – The SBA 8(a) Certification Program is a Federal Program which establishes firms as disadvantaged and eligible for participation in the Federal SBA Program.

Socially and Economically Disadvantaged Individual Pursuant to 49 CFR, Part 26 – Those individuals who are citizens of the United States (or lawfully admitted permanent residents). For convenience, these individuals and groups are referred to as "minorities" in this document and who are:

1. Found by the MDOT to be socially and economically disadvantaged on a case-by-case basis;

2. Any individual in the following groups, members of which are rebuttably presumed to be socially and economically disadvantaged.

a. "Black Americans," which includes persons having origins in any of the Black racial groups of Africa;

b. "Hispanic Americans," which includes persons of Mexican, Puerto Rican, Cuban, Dominican, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race;

c. "Native Americans," which includes persons who are American Indian, Eskimos, Aleuts, or Native Hawaiians;

d. "Asian-Pacific Americans," which included persons whose origins are from Japan, China, Taiwan, Korea, Burma (Myanmar), Vietnam, Laos, Cambodia (Kampuchea), Thailand, Malaysia, Indonesia, the Philippines, Brunei, Samoa, Guam, the U.S. Trust Territories of the Pacific Islands (Republic of Palau), the Commonwealth of the Northern Marianas Islands, Macao, Fiji, Tonga, Kirbati, Juvalu, Nauru, Federated States of Micronesia, or Hong Kong;

e. "Subcontinent Asian American," which includes persons whose origins are from India, Pakistan, Bangladesh, Bhutan, the Maldives Islands, Nepal or Sri Lanka;

f. Women;

3. Only those persons whose personal net worth does not exceed $750,000 may be found to be economically disadvantaged.

B. DBE/MBE and Good Faith Effort Requirements

1. This contract includes a DBE participation goal for subcontracting and/or procurement of materials and/or services. Bidders (or offerors) must make a good faith effort to meet the DBE participation goal **before bids or proposals are due**, including outreach efforts. A bid or initial proposal must include both a completed and executed Certified DBE Utilization and Fair Solicitation Affidavit and DBE Participation Schedule. The failure of a bidder to complete and submit these documents shall result in a determination that the bid is not responsive. The failure of an offeror to complete and submit these documents shall result in a determination that the proposal is not susceptible of being selected for award.

2. In making a good faith effort to achieve the DBE goal, prior to completing the Certified DBE Utilization and Fair Solicitation Affidavit and the DBE Participation Schedule and prior to submitting a bid or initial proposal the bidders (or offerors) including those bidders or offerors that are certified DBEs must:

a. Identify specific work categories within the scope of the procurement appropriate for subcontracting and/or procurement of materials and/or services;

b. Solicit DBEs in writing at least 10 days before bids or initial proposals are due, describing the identified work categories and providing instructions on how to bid on the subcontracts and/or procurement of materials and/or services;

c. Attempt to make personal contact with the DBEs solicited and to document these attempts;

d. Assist DBEs to fulfill, or to seek waiver of, bonding requirements; and

e. Attend prebid or other meetings the procurement agency schedules to publicize contracting opportunities to DBEs.

3. All firms bidding on a Federal-Aid Contract shall submit the name and address of all subcontractors, service providers and suppliers that submitted quotes on the Contract. All subcontractors, service providers and suppliers shall complete and submit the form entitled Contractor Information, to the Administration.

4. The bidder shall seek commitments from disadvantaged business enterprises by subcontracting and/or procurement of materials and/or services, the combined value of which equals or exceeds the appropriate percent (goal) of the total value of the prime contract. A bidder may count toward its DBE goals expenditures for materials and supplies obtained from DBE regular dealers and/or manufacturers provided that the DBEs assume the actual and contractual responsibility for the provision of the materials and supplies. The bidder may count its entire expenditure to a DBE manufacturer (i.e., a supplier that produces goods from raw materials or substantially alters them before resale). The bidder may count sixty (60) percent of its expenditures to a DBE regular dealer that is not a manufacturer, provided that the DBE supplier performs a commercially useful function in the supply process. The apparent low bidder shall submit to the Administration, within ten (10) business days after notification that it is the apparent low bidder, an acceptable Affirmative Action Plan for the utilization of Disadvantaged Business Enterprises in this Contract. The Contract will not be awarded without the Bidder's AAP being approved by the Administration.

The Affirmative Action Plan shall include as a minimum:

a. The name of an employee designated as the bidder's liaison officer for minority affairs.

b. A complete DBE Subcontractor Project Participation Affidavit (MDOT-OP-019-2), using contractors whose names appear in the DBE/MBE directory or who are otherwise certified by MDOT as being a disadvantaged business enterprise. Except as permitted by law and approved by the Administration, this affidavit shall include all DBE firms identified on the DBE Participation Schedule with a percentage of participation that meets or exceeds the percentage of participation indicated in the bid or initial proposal.

c. A completed Outreach Efforts Compliance Statement (MDOT-OP 018-2).

5. When a bidder intends to attain the appropriate goal for disadvantaged business enterprise participation by use of a joint venture, the bidder shall submit a Joint Venture Disclosure Affidavit (Form D-EEO-006-A) showing the extent of disadvantaged business participation. If a bidder intends to use a joint venture as a subcontractor to meet its goal, the affidavit shall be submitted through the bidder by the proposed subcontractor and be signed by all parties. A DBE, even in a joint venture arrangement shall be certified as a DBE by MDOT prior to being included in the Affirmative Action Plan.

6. Where the proposed DBE participation does not meet the DBE contract goals, sufficient evidence to demonstrate that the bidder has taken all necessary and reasonable steps to make a good faith effort to meet these goals shall be required.

7. Determination of Bid Responsiveness for Federal-Aid Contracts

If the bidder is unable to secure from DBEs by subcontracting and/or by procurement of materials and/or services, commitments which at least equal the appropriate percent (goal) of the values of the prime Contract at the time of bid, he shall request, in writing, a waiver of the unmet portion of the goal. This request must be initiated by checking the appropriate box on the Certified DBE Utilization and Fair Solicitation Affidavit submitted with the bid or initial proposal.

The waiver may be granted by the Administrator. To obtain approval of a waiver, the bidder shall submit the following information:

a. A detailed statement of efforts made prior to bid to contact and negotiate with DBEs including: (i) the dates, names, addresses, and telephone numbers of DBEs who were contacted; (ii) a description of the information provided to DBEs requesting the plans, specifications, and anticipated time schedule for portions of the work to be performed and (iii) a detailed statement of the reasons why additional prospective agreements with DBEs were not reached;

b. A detailed statement of the efforts made to select portions of the work proposed to be performed by DBEs in order to increase the likelihood of achieving the stated goals;

c. For each DBE that the Contractor considers not qualified, but from which a bid has been received, a detailed statement of the reasons for the bidder's conclusion; and

d. For each DBE contacted but unavailable, (i) a Minority Contractor Unavailability Certificate (Form OOC46) signed by the disadvantaged business enterprise, or (ii) a statement from the bidder shall be submitted that states that the DBE refused to sign the Certificate.

8. Guidance concerning good faith efforts. The following is a list of the types of actions and factors that will be used to determine the bidder's or offeror's good faith efforts to obtain DBE participation. It is not intended to be a mandatory checklist, nor is it intended to be exclusive or exhaustive. Other factors or types of efforts may be relevant in appropriate cases.

(1) Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of certified DBEs who have the capability to perform the work of the contract. The bidder must solicit this interest within sufficient time to allow the DBEs to respond to the solicitation. The bidder must determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations.

(2) Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the bidder or offeror might otherwise prefer to perform these work items with its own forces.

(3) Providing interested DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.

(4) **(a)** Negotiating in good faith with interested DBEs. It is the bidder's or offeror's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation.

(b) A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBEs is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also, the ability or desire of a prime contractor to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Bidders and offerors are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.

(5) Not rejecting DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. The contractor's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the contractor's efforts to meet the project goal.

(6) Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance as required by the recipient or contractor.

(7) Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services.

(8) Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, state, and Federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBEs.

(9) In determining whether a bidder or offeror has made good faith efforts, you may take into account the performance of other bidders or offerors in meeting the contract goal. For example, when the apparent successful bidder or offeror fails to meet the contract goal, but others meet it, the Administration may reasonably raise the question of whether, with additional reasonable efforts, the apparent successful bidder or offeror could have met the goal. If the apparent successful bidder or offeror fails to meet the goal, but meets or exceeds the average DBE participation obtained by other bidders or offerors, the Administration may view this, in conjunction with other factors, as evidence of the apparent successful bidder or offeror having made good faith efforts.

9. Bidder Use of MBE Special Services

The bidder shall consider, whenever possible, utilizing the services of minority-owned banks. Most minority banks are full-service corporations that can provide an array of financial services such as Treasury and Tax Loan fund accounts, time and demand deposit accounts, payroll services, and if needed, organization investment counseling.

10. Bidder Records

The bidder shall maintain records showing actions which have been taken to comply with procedures set forth herein.

11. Bidder Cooperation

The bidder shall cooperate with the Administration Representative in any reviews of the Contractor's procedures and practices with respect to DBEs which the Administration Representative may from time to time conduct.

12. Bidder MBE Modifications

During the life of the Contract, all plans to modify the approved DBE participation program will require the approval of the Administrator or his authorized representative. This shall include any changes to the items of work to be sublet or materials and services to be obtained which differ for those in the original DBE participation program. Any such request for revisions shall be directed to the appropriate District Engineer for their disposition.

C. RECORDS AND REPORTS

1. The Contractor shall keep such records as are necessary to determine compliance with its Minority Business Enterprise utilization obligations. The records kept by the Contractor shall be designed to indicate:

a. The name of disadvantaged and non-disadvantaged subcontractors and suppliers, the type of work materials or services being performed on or incorporated in this project, and the monetary value of such work materials or services.

b. Documentation of all correspondence, contacts, telephone calls, etc., to obtain the services of disadvantaged business enterprises on this project.

c. The progress and efforts made in seeking out disadvantaged contractor organizations and individual disadvantaged contractors for work on this project.

2. Information required to be submitted for Federally Assisted contracts in accordance with 49 CFR Part 26:

a. All bidders (not only the apparent successful bidder) shall provide the following information:

(1) The age of the bidding firm; and

(2) The annual gross receipts of the bidding firm.

b. All bidders (not only the apparent successful bidder) shall provide the following information for each firm quoting or considered as subcontractors:

(1) The name of firm; and

(2) The address of firm.

c. The Administration will contact each of the firms quoting or considered as subcontractors to obtain:

(1) The age of the firm; and

(2) The annual gross receipts of the firm

If this information already has been gathered by the Administration on a firm and it is current, it will not be requested.

3. The Contractor shall submit reports on a quarterly basis of those contracts and other business transactions executed with disadvantaged business enterprises with respect to the records referred to in Subparagraph 1.a above, in such form, manner, and content as prescribed by the Administration. The quarterly reports shall be due on the 15th calendar day of January, April, July, and October. If the Contractor cannot submit their report on time, they shall notify the Administration's Representative and request additional time to submit the report. Failure of the Contractor to report in a timely manner may result in a finding of noncompliance. Additional reports may be required by the Administration upon written request.

4. To ensure compliance with the certified DBE contract participation goals, the Contractor shall:

a. Submit monthly, a report listing unpaid invoices, over 30 days, from all certified DBE subcontractors and the reason payment has not been made;

b. Include in its agreement with certified DBE subcontractors a requirement that the DBE subcontractors are to submit monthly to the Administration, a report identifying the prime Contractor and listing the following:

1. Payment received from the Contractor in the preceding 30 days; and

2. Invoices for which the subcontractor has not been paid.

5. All such records shall be retained for a period of three years following acceptance of final payment and shall be available for inspection by the U.S. Department of Transportation, the Maryland Department of Transportation, and the Administration.

D. ADMINISTRATIVE PROCEDURES FOR ENFORCEMENT

1. Whenever the Administration believes the prime Contractor or any subcontractor may not be operating in compliance with the terms of these provisions, the Administration Representative will conduct an investigation. If the Administration Representative finds the prime Contractor or any subcontractor not in compliance with these provisions, he will make a report of non-compliance and notify such Contractor in writing of the steps that will, in the judgment of the Administration, bring the Contractor into compliance. If the Contractor fails or refuses to comply fully with such steps, the Administration Representative will make a final report of noncompliance to the Administrator, who may direct the imposition of one or more of the sanctions listed below:

a. Suspension of work on a project, pending correction;

b. Withholding payment or a percentage thereof, pending correction;

c. Referral of DBE/MBE to MDOT Office of MBE for review for decertification or minority business fraud investigation;

d. Referral to MDOT Office of MBE for review/referral to the Attorney General's Office for review for initiation of debarment;

e. Referral to the Attorney General's Office for review for debarment or for criminal prosecution through the MDOT Office of General Counsel; or

f. Any other action as appropriate.

The Administrator will determine which sanction(s) should be imposed in order to promote the purpose of the MDOT DBE/MBE Program.

2. If the documents used to determine the status of a DBE contain false, misleading, or misrepresenting information, the matter may be referred to the MDOT Office of MBE for appropriate action.

3. Loss of DBE Certification

a. When a prime Contractor has made a commitment to use a DBE who has lost its certification but the subcontract has not been executed prior to the notice of loss of certification, the prime Contractor is required to obtain an eligible, certified DBE for the contract or demonstrate to MDOT that it has made a good faith effort to do so.

b. When a prime Contractor has executed a contract with a DBE subcontractor before the notice of loss of certification, the prime Contractor may continue to use the firm on the contract and may continue to receive credit towards its DBE goal, i.e., contract goal, for the work of that subcontractor.

c. The work carried out by a DBE Prime Contractor would be counted by MDOT up to the loss of certification. The work performed after the loss of certification would not be considered DBE participation.

d. When a DBE subcontractor has lost its certification, MDOT may not continue to count the DBE participation which takes place after the loss of certification as DBE work when counting participation towards the overall goal of the modal administration or the Department.

e. If a DBEs loss of certification is the result of exceeding the size standards while performing on a contract, the DBE participation may be counted for both the contract goal and the overall goal.

TRAFFIC CONTROL PLAN CERTIFICATION

PRIOR TO THE COMMENCEMENT OF WORK ON THIS PROJECT, THE SUCCESSFUL BIDDER WILL BE REQUIRED TO COMPLETE A TRAFFIC CONTROL PLAN CERTIFICATION, CONTAINING THE INFORMATION SHOWN BELOW. THE CERTIFICATION FORM WILL BE PROVIDED TO THE SUCCESSFUL BIDDER UPON AWARD OF THE CONTRACT.

The Administration's Traffic Control Plan (TCP) has been reviewed and the following course of action shall be followed:

Option 1_____
The TCP is accepted and shall be used on this project.

Option 2_____
The TCP is accepted; however, revisions and/or additions shall be submitted for approval in conformance with the Administration's Specifications 104.01.

Option 3_____
The TCP is not accepted and revision shall be submitted for approval in accordance with the Administration's Specifications 104.01.

It is understood that the effective implementation of the approved TCP is the responsibility of the Contractor. Minor modifications may be made by the Traffic Manager if field conditions warrant and prior concurrence is obtained from the Engineer. Significant changes to the TCP will be submitted to the Engineer in writing, for approval, in conformance with the Administration's Specifications 104.01.

_____ (DATE)

_____ (SIGNATURE)

_____ (PRINT SIGNATURE)

_____ (TITLE)

PREVAILING WAGE
INSTRUCTIONS FOR THE CONTRACTOR

PAYROLLS.

Non-Federally Funded Contracts. For Non-Federally funded projects, which include prevailing wage rates**,** the prime Contractor and each subcontractor shall submit two copies of their payroll records. One copy shall be submitted to the Project Engineer and one shall be sent to the Maryland State Commissioner of Labor & Industry, Room 607, 1100 N. Eutaw Street, Baltimore, MD 21201, where they will be available for inspection during business hours. All wages shall be paid in conformance with the State Finance and Procurement Article, Section 17-201-17-226 of the Annotated Code of Maryland and the Fair Labor Standards Amendments of 1974 (P.L. 93259). If the award amount of a Non-Federally funded job is less than $500,000, the project will be exempt from prevailing wage requirements.

A review has been made of the wage conditions in the locality and, based on the information available, the wage rates and fringe payments listed are determined by the Commissioner of the Department of Labor and Industry to be prevailing for the Contract for the described classes of labor in conformance with the law. It shall be the responsibility of the Contractor to fully comply with the law and to contact the Office of the Commissioner of Labor and Industry for interpretation of the provisions of the law.

Federally Funded Contracts. For Federally funded projects, the prime Contractor and each subcontractor shall submit one copy of the certified payroll to the Project Engineer.

General Requirements for Federally and Non-Federally Funded Contracts. All payrolls are subject to the following requirements:

(a) All payrolls shall be numbered, beginning at No. 1, and consecutively numbered through the end of the Contract.

(b) Contract and FAP numbers shall be shown on all payrolls (as applicable).

(c) All payrolls shall include the employees' full name, classification, social security number, and home address.

(d) All payrolls shall show the employee's basic hourly wage rate, overtime rate (if applicable), and the number of hours worked (tabulated both daily and weekly).

(e) When fringe benefits are required, indicate separately the amount of employer contributions to fringe benefit funds and/or programs. The fringe benefits shall be individually identified, but may be tabulated on a separate sheet. When required fringe benefits are paid in cash, add the required fringe benefit amount to the basic hourly rate to obtain the total prevailing wage rate for the employee.

(f) The employee's net pay and the itemized deductions shall be included in all payrolls.

(g) A Contractor may make deductions that are required by law or required by a collective bargaining agreement (between the Contractor and a bona fide labor organization). Deductions are also permitted if they are identified in a written agreement between the employee and employer that was made at the beginning of employment, provided that the Contractor presents the agreement to the Administration before the employee begins working on the Contract. Each payroll shall also include the U.S. Department of Labor and Hour Public Contracts Division Statement of Compliance Form WH-347 (or its equivalent), signed by an appropriate official of the Contractor/subcontractor. The Contractor's name, address, and telephone number shall also to be shown.

(h) On Non-Federally funded projects, all apprentices shall be registered with the Maryland Apprenticeship and Training Council.

(i) Contractors employing a classification of worker for which a wage rate was not included on the original wage decision, shall submit to the Wage and Hour Team, a request for an additional classification and rate prior to the employee's employment at the project.

(j) Payrolls for Non-Federally Funded projects shall be submitted within 14 calendar days after the end of each payroll period.

(k) Payrolls for Federally Funded projects shall be submitted within 7 calendar days after the end of each payroll period.

OVERTIME.

Non-Federally Funded Contracts. Overtime rates shall be paid by the prime Contractors and subcontractors under their Contracts and agreements with their employees, which in no event shall be less than time and a half the prevailing hourly rate of wages for all hours worked in excess of ten hours in any one calendar day or forty hours in any one calendar week and work performed on Sundays and legal holidays. Fringe benefits shall be paid for all hours worked, including the overtime hours. However, the fringe benefit amounts may be excluded from the half time premium due as overtime compensation.

Federally Funded Contracts. Overtime rates shall be paid as specified in Form FHWA 1273. Fringe benefits shall be paid for all hours worked, including the overtime hours. However, the fringe benefit amounts may be excluded from the half time premium due as overtime compensation.

PENALTIES.

Non-Federally Funded Contracts. When the Contractor is delinquent in submitting payroll records, processing of partial payment estimates will be held in abeyance, pending receipt of the records. The Contractor shall be liable to the Administration for liquidated damages in the amount of $10.00 for each calendar day the records are late.

The Contractor shall be liable to the Administration for liquidated damages in the amount of $20.00 for each day that an employee is paid less than the prevailing wage.

Federally Funded Contracts. When the Contractor is delinquent in submitting payroll records, processing of partial payment estimates will be held in abeyance pending receipt of the records.

INQUIRIES.

Requests for information or questions shall be addressed to:

Maryland State Highway Administration
Office of Highway Development
Wage and Hour Team
707 N. Calvert Streets, MS C-102
Baltimore MD 21203-0717
Fax: 410-209-5001

WAIS Document Retrieval
GENERAL DECISION: MD20080016 05/30/2008 MD16

Date: May 30, 2008
General Decision Number: MD20080016 05/30/2008

Superseded General Decision Number: MD20070016

State: Maryland

Construction Type: Highway

Counties: Montgomery and Prince George's Counties in Maryland.

HIGHWAY CONSTRUCTION PROJECTS (Excluding tunnels, building structures in rest area projects and railroad construction; bascule, suspension and spandrel arch bridges; bridges designed for commercial navigation; bridges involving marine construction; and other major bridges)

Modification Number	Publication Date
0	02/08/2008
1	05/02/2008
2	05/09/2008
3	05/30/2008

CARP0132-002 05/01/2008

	Rates	Fringes
Piledriver	$ 23.87	7.10

ELEC0070-004 05/05/2008

	Rates	Fringes
Street Lights, Traffic Signal and Traffic Signal Controls		
Groundmen	$ 8.47	8.75%+4.75
Street Light Traffic Control Technician	$ 19.48	8.75%+4.75

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* ENGI0077-013 05/01/2008

	Rates	Fringes
Power equipment operators:		
Cranes (35 tons and above)	$ 28.74	7.17+a
Cranes (Under 35 tons)	$ 28.28	7.17+a
Mechanics	$ 30.11	7.17+a

a. PAID HOLIDAYS: New Year's Day, Inaugural Day, Decoration Day,Independence Day, Labor Day, Martin Luther Kings Birthday, Veterans' Day, Thanksgiving Day, Friday after Thanksgiving and Christmas Day.

IRON0201-003 05/01/2008

	Rates	Fringes
Ironworker (Reinforcing)	$ 26.15	12.08

SUMD2003-001 01/02/2003

	Rates	Fringes
Carpenters (Including Formsetting)	$ 16.15	
Cement Mason/Finisher	$ 15.11	
Electricians	$ 27.33	4.94
Ironworkers, Structural	$ 20.85	
Laborers:		
Air Tool Operators	$ 11.35	
Asphalt Rakers/Luteman	$ 13.05	
Concrete Saw	$ 18.13	
Flagger/Traffic Control	$ 12.60	
Landscape	$ 10.05	
Mason Tender, Cement	$ 11.93	
Pavement Marker	$ 13.17	
Pipelayers	$ 11.79	
Screed	$ 14.46	
Unskilled	$ 11.20	
Painters, Brush and Roller	$ 23.00	
Power equipment operators:		
Asphalt Distributor	$ 14.45	
Backhoes	$ 17.46	
Bobcats	$ 15.51	
Bulldozers	$ 17.46	
Excavators	$ 18.97	
Gradalls	$ 18.03	2.76
Loaders	$ 15.14	
Milling Machine	$ 15.43	
Oilers	$ 15.05	2.98
Pavers	$ 15.70	2.35
Rollers	$ 13.92	
Screed	$ 14.90	
Sideman	$ 11.17	
Sweeper	$ 12.59	
Truck drivers:		
Dump	$ 13.45	
Tack	$ 15.28	
Water	$ 12.72	

TEAM0639-006 03/07/2004

	Rates	Fringes

Truck drivers:
Boom Truck

Two Axle/Tandem.....$ 16.00 5.82+a

a. VACATION: Employees will receive one (1) week's paid vacation after one (1) year of service.

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

NOTICE OF ACTIONS REQUIRED FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)

1. The Offeror's or Bidders attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate work force in each trade on all construction work in the covered area, are as noted in Appendix A and B:

These goals are applicable to all the Contractors' construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

The contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this notification. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is noted on appendix B.

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (Executive Order 11246)

1. As used in these specifications:

a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;

b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;

c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.

d. "Minority" includes:

(i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

(ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish culture or origin regardless of race);

(iii) Asian and Pacific Islander (all persons having origins in any of the original people of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and,

(iv) American Indians or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7.a through 7.p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. The Contractor is expected to make substantially uniform progress toward its goal in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with reason therefore, along with whatever additional actions the Contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7.b above.

f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the

policy with all management personnel and with all minority and female employees at least once a year and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO Policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to insure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7.a through 7.p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more if its obligations under 7.a through 7.p of these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female work force participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's non-compliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractors shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and

retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents

(a.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

16. The Contractor will receive at the time of Award Federal Form CC-257 for his use in reporting monthly the Affirmative Actions for minority and female which he has employed.

APPENDIX A

The following goals and timetables for female utilization shall be included in all Federal and federally assisted construction contracts and subcontracts in excess of $10,000. The goals are applicable to the Contractor's aggregate on-site construction work force whether or not part of that work force is performing on a Federal or federally assisted construction contract or subcontract.

AREA COVERED: Nationwide

GOALS AND TIMETABLES

Timetable	Goals (percent)
From April 1, 1978 until March 31, 1979	3.1
From April 1, 1979 until March 31, 1980	5.0
From April 1, 1980 until further notice	6.9

APPENDIX B

Until further notice, the following goals for minority utilization in each construction craft and trade shall be included in all Federal or federally assisted construction contracts and subcontracts in excess of $10,000 to be performed in the respective geographical areas. The goals are applicable to each nonexempt contractor's total on-site construction work force, regardless of whether or not part of that work force is performing work on a Federal, federally assisted or nonfederally related project, contract or subcontract.

Construction contractors which are participating in an approved Hometown Plan (see 41 CFR 60-4.5) are required to comply with the goals of the Hometown Plan with regard to construction work they perform in the area covered by the Hometown Plan. With regard to all their other covered construction work such contractors are required to comply with the applicable SMSA or EA goal contained in this appendix B-80.

State	Goal (percent)
Maryland:	
019 Baltimore, MD:	
SMSA Counties:	
0720 Baltimore, MD	23.0
MD Anne Arundel; MD Baltimore;	
MD Carroll; MD Harford;	
MD Howard; MD Baltimore City	
Non-SMSA Counties	23.6
MD Caroline; MD Dorchester;	
MD Kent; MD Queen Annes;	
MD Somerset; MD Talbot;	
MD Wicomico; MD Worcestar	
Washington, DC:	
020 Washington, DC:	
SMSA Counties:	
8840 Washington, DC	28.0
MD Charles; MD Montgomery;	
MD Prince Georges	
Non-SMSA Counties	25.2
MD Calvert; MD Frederick	
MD St. Marys; MD Washington	
Pennsylvania	
Non-SMSA Counties	4.8
MD Allegany: MD Garrett	

TRAINING PROVISIONS

As part of the Contract's Equal Employment Opportunity Affirmative Action Program, on-the-job training shall be provided as follows:

The on-the-job training shall be aimed at developing full journeypersons in the type of trade or job classification involved. On this Contract, Zero (0) persons will be trained.

In the event that a Contractor subcontracts a portion of the Contract work, the Contractor shall determine how many, if any, of the trainees are to be trained by the subcontractor, however, the Contractor shall retain the primary responsibility for meeting the training requirements imposed by this Provision. The Contractor shall also insure that this training Provision is physically included in each subcontract to insure that the workforce utilized by the subcontractor meet the goals for minority and female employment and training. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training.

The number of trainees in each classification shall be distributed among the work classifications on the basis of the Contractor's needs, minority and women employment goals specified for each trade in the Contract Provision, and the reasonable area of recruitment.

Prior to beginning construction, the Contractor shall submit to the Administration for approval a Manpower and Training Utilization (MTU) Schedule no later than at the preconstruction meeting.

The MTU schedule shall include:

1. The proposed training programs.

2. The number of trainees to be trained in each classification.

3. Anticipated starting and ending dates for training in each classification.

No Contract work may be undertaken until the Administration has accepted the schedule.

If the submitted training programs fail to meet the requirements as defined within these Provisions, the Administration will withhold one percent of the total category code one pay items from the payment due the Contractor. The Contractor shall submit a revised Manpower and Training Utilization Schedule when major changes in the Contract work schedule occur that substantially affect the previously submitted schedule.

The Contractor shall be credited for each trainee employee who is currently enrolled or becomes enrolled in an approved program and will be reimbursed for the hourly cost of the trainee as specified in the schedule of prices.

Training and upgrading of minorities and women toward journeyperson status is a primary objective of this Training Provision. The purpose for this objective is to insure a pool of qualified minorities and women to replace those journeypersons who, in the natural course of events will leave the workforce. The program will also provide opportunities to the minorities and women trainees in geographic areas where shortages in minority and women journeypersons are prevalent and recognized due to the Contractor's inability to meet the Equal Employment Opportunity goals specified in this Contract.

The training requirements of this Training Provision are not intended nor shall they be used to discriminate against any applicant for training, whether a member of a protected class or not. It is

the Contractor's responsibility to demonstrate good faith efforts to ensure an adequate workforce representation of minorities and women in all job classifications on this Contract. Therefore, the Contractor shall consider the employment Contract goals set for minorities and females when enrolling trainees. The Contractor's utilization of the on-the-job training goals will be weighed when an Equal Employment Opportunity workforce compliance determination is made.

The Contractor shall make every effort to enroll minority and women trainees (e.g., by conducting systematic and direct recruitment through public and private sources likely to yield minorities and women to the extent that these persons are available within a reasonable area of recruitment).

No employee shall be employed as a trainee in any classification which the individual has successfully completed a training program leading to journeyperson status or has been employed as a journeyperson. This includes a person gainfully employed as a journeyperson by virtue of informal on-the-job training. The Contractor should satisfy this requirement by including appropriate questions in the employee job application or by other suitable means. Regardless of the method used, the Contractor's records shall document the findings in each case. In the case of apprentices, evidence of indentureship and registration of the approved apprenticeship program shall be included in the Contractor's records.

The minimum length and type of training and rate for each classification shall be specified in the training program by the Contractor and approved by the Administration and the Federal Highway Administration.

The Administration will approve any program specified in the Administration's On-The-Job Training Manual. The Administration and the Federal Highway Administration will consider other programs if it is reasonably calculated that the programs conform to the Equal Employment Opportunity obligations of the Contract and will qualify the average trainee for journeyperson status in the specified classification by the end of the training period. Apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, and training programs approved by, but not necessarily sponsored by the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training will also be acceptable, provided that the program being offered is administered in a manner consistent with the Equal Employment obligation of Federal-aid highway construction Contracts and meets the minimum requirements of this Training Provision.

Some offsite training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training.

Unless otherwise specified, the Contractor will be reimbursed 80 cents per hour of training given an employee on this Contract in conformance with an approved training program. As approved by the Engineer, reimbursement will be made for training persons in excess of the number specified herein. This reimbursement will be made even though the Contractor received additional training program funds from other sources, provided that the other sources do not specifically prohibit the Contractor from receiving other reimbursement. Reimbursement for offsite training indicated above will only be made to the Contractor where the Contractor does one or more of the following and the trainees are concurrently employed on a Federal-aid project:

1. Contributes to the cost of the training.

2. Provides the instruction to the trainee or pays the trainee's wages during the offsite training period.

No payment will be made to the Contractor if either the failure to provide the required training, or the failure to hire the trainee as a journeyperson is caused by the Contractor and evidences a lack of "good faith" on the part of the Contractor in meeting the requirements of this Training Provision. It is normally expected that a trainee will begin training on the project as soon as feasible after the start of work utilizing the skill involved and remain on the project as long as training opportunities exist in the work classification or until the program is completed. It is not required that all trainees be on board for the entire length of the Contract. A Contractor will have fulfilled their responsibilities under this Training Provision when:

1. Systematic and direct recruitment likely to yield qualified minority and women applicants is conducted through:

   a. Public and private referral sources.

   b. Advising the existing workforce of training opportunities.

   c. Unions (if applicable).

2. Acceptable training has been provided to trainees enrolled in the program.

3. The number of specified trainees have completed the minimum hours required in an approved training program.

4. Trainees completing approved programs are retained in the workforce as journeypersons.

The Contractor shall pay the trainees at least 60 percent of the appropriate minimum journeyperson's hourly rate plus the full fringe benefits specified in the Contract for the first half of the training period, 75 percent for the third quarter of the training period plus full fringe benefits, and 90 percent for the last quarter of the training period plus full fringe benefits. However, in no case shall the total hourly rate be less than the U.S. Department of Labor's unskilled laborer wage rate for the project. In addition, all trainees shall be identified as such on the certified payroll.

The Contractor shall furnish the trainee a copy of the approved training program in which the trainee is enrolled. The Contractor shall provide each trainee with a certificate showing the type and length of training satisfactorily completed. The Contractor shall submit a Certificate to the trainee in the following instances:

1. Certificate of Completion when a trainee completes the total number of hours required to complete a training program.

2. Certificate of Training when a trainee does not totally complete the required program hours.

The Contractor shall provide for the maintenance of records and furnish periodic reports inclusive of the Administration's Contractor's Semiannual Training Reports, documenting his performance under this Training Provision. The Semiannual Training Report is to be submitted by the 10th of the month following the reporting period (July 10 and January 10).

If the Contractor fails to fully comply with these Training Provisions, the Administration's Representative will make a final report of non compliance to the Administrator, who may direct the imposition of one or both of the sanctions listed below:

1. Withholding a percentage of the progress payment.

2. Other action appropriate and/or within the discretion of the Administrator.

NOTICE TO ALL HOLDERS OF THIS CONTRACT DOCUMENT

HIGH VISIBILITY SAFETY APPAREL POLICY

BACKGROUND. Research indicates that high visibility garments have a significant impact on the safety of employees who work on highways and rights-of-way. In addition, high visibility garments may help to prevent injuries and accidents and to make highway workers more visible to the motoring public, which ultimately improves traffic safety.

STATEMENT OF POLICY.

(a) The High Visibility Safety Apparel Policy provides a standardized apparel program.

(b) The program seeks to improve the visibility of all persons who work on Administration highways and rights-of-way.

(c) All apparel shall contain the appropriate class identification label.

(d) Compliance with this policy is retroactive and becomes effective immediately. All affected employees shall receive high visibility apparel awareness training.

APPLICABILITY. This policy applies to all Administration employees and all other persons who work on Administration highways and rights-of-way. All workers shall wear, at a minimum, Class 2 ANSI/ISEA 107/2004 apparel.

(a) For Administration employees, this apparel shall have a fluorescent yellow-green background material color and be the outermost garment worn.

(b) Retro-reflective material color for Administration employee apparel shall be silver or white and be visible at a minimum distance of 1,000 feet. The retro-reflective safety apparel shall be designed to clearly recognize and differentiate the wearer from the surrounding work environment. The retro-reflective material may be contrasted by fluorescent orange background material not exceeding one and one half inches on either side of the retro-reflective material.

(c) For non-Administration employees, this apparel shall be either fluorescent orange-red or fluorescent yellow-green background material color and be the outermost garment worn.

(d) Retro-reflective material color for non-Administration employee apparel shall either be orange, yellow, white, silver, yellow-green, or a fluorescent version of these colors, and be visible at a minimum distance of 1,000 feet. The retro-reflective safety apparel shall be designed to clearly recognize and differentiate the wearer from the surrounding work environment.

REFERENCES.

(a) ANSI/ISEA 107/2004 standard – American National Safety Institute/International Safety Equipment Association

(b) MUTCD 2003 – Manual for Uniform Traffic Control Devices - Sections 6D.03B and 6E.02

(c) Visibility Research – The VCTR 1989 report concludes that fluorescent colors, when compared with non-fluorescent colors, enhance the daytime conspicuity of worker clothing.

DEFINITIONS.

(a) Apparel – The outermost high-visibility garment worn by employees who work on Administration highways and rights-of-way.

(b) Highways – All roads owned by the Maryland Department of Transportation and maintained by the Administration.

(c) High Visibility – The ability for workers to be distinguishable as human forms to be seen, day and night, at distances that allow equipment operators and motorists to see, recognize, and respond.

PROJECT DESCRIPTION

This project, located in Montgomery County, involves resurfacing and safety improvements on MD 187 from 150' South of Center Drive to North Brook Lane. The total project length is approximately 0.84 miles. The work will consist of patching, grinding and resurfacing the existing pavement; minor excavation; replacing existing inlets, clean pipes; upgrade existing ramps to meet current ADA standards; replacement of damaged or deteriorated curb, gutter and sidewalk; installing pavement markings; installation and replacement of traffic loop detection.

The traffic signal portion of the project involves replacing traffic loops for presence detection and micro-loops for advanced detection. Signalization work will also include the following:

- Intersection of MD 187 and Lincoln: Reconstruction of signals to install APS/CPS and LED signal heads.
- Intersection of MD 187 and McKinley: Reconstruction of three signalized crossings to install APS/CPS, LED signal heads and video detection. Scope also includes raising an overhead utility line to provide adequate clearance above the new LED signal heads.
- Intersection of MD 187 and Huntington: Reconstruction of two signalized crossings to install APS/CPS and LED signal heads.

The locations of work for these items are identified within these Special Provisions and as directed by the Engineer. Construction Plans were not developed for this project. All explanatory information is included within these specifications and special provisions.

SPECIFICATIONS

All work on this project shall conform to the Maryland Department of Transportation, State Highway Administration's Specifications entitled, "Standard Specifications for Construction and Materials" dated January 2001 revisions thereof, or additions thereto, and the Special Provisions included in this Invitation for Bids.

EMPLOYMENT AGENCY

the Maryland Department of Human Resources is located at:

Montgomery County
Department of Economic and Employment Development

1102 Veirs Mill Road
Wheaton Plaza South Office Building
Wheaton, MD 20902
Phone: (301) 929-4350
Fax: (301) 929-4383

NOTICE TO CONTRACTOR

PROJECT SCHEDULE. Section 109 shall only apply when a CPM Project Schedule item is included in the Schedule of Prices. Otherwise, all Project Schedules shall conform to Section 110.

NOTICE TO BIDDERS. The Proposal Form Packet in this Invitation for Bids requires the following information be submitted for the Bidder and each firm quoting or considered as subcontractors:

(a) Name of firm.

(b) Address of firm.

(c) MBE, Non-MBE, DBE, or Non-DBE.

(d) Age of firm.

(e) Annual gross receipts per last calendar year.

Note that there are provisions for submitting copies for additional subcontractors, and that an "X" is required to indicate whether or not additional copies have been submitted.

AFFIRMATIVE ACTION PLAN (AAP) CONTRACT GOALS. In order to be in compliance with the revised MBE/DBE laws effective October 1, 2004 the bidder is required to complete the AAP information on pages 17, 18, 21, 22, 23, and 24 of 28 of the Contract Provisions, Proposal Form Packet —Federal, or complete the AAP information on pages 16, 17, 20, 21, 22, and 23 of 28 of the Contract Provisions, Proposal Form Packet—State, or complete the AAP information on pages 17, 18, 21, 22, 23, and 24 of 29 of the Contract Provisions, Proposal Form Packet—State Small Business Reserve Procurement. Failure to complete the information may be grounds for the bid to be declared non-responsive.

BOOK OF STANDARDS. The Book of Standards for Highway and Incidental Structures is now available only on the Administration's Internet Site at www.marylandroads.com. The Book of Standards can be located by clicking on Business with SHA; Business Standards and Specifications; and Book of Standards for Highway and Incidental Structures. Hard copies of the Book of Standards will no longer be sold in the Cashiers Office and hard copy distributions of the Standard updates will no longer be made.

PAYMENT OF STATE OBLIGATIONS. Electronic funds transfer will be used by the State to pay the Contractor for any Contract expected to exceed $200,000 and any other State payments unless the State Comptroller's Office grants the Contractor an exemption.

Therefore, by submitting a response to this solicitation, the Bidder/Offeror agrees to accept payment by electronic funds transfer unless the State Comptroller's Office grants an exemption.

Prior to the Award of the Contract the selected Bidder/Offeror shall register using the X-10 Vendor Electronic Funds (EFT) Registration Request Form. The instructions and the form are located on the internet at compnet.comp.state.md.us/gad.

Any request for exemption shall be submitted to the State Comptroller's Office at the address specified on the X-10 form and shall include the business identification information as stated on the form and include the reason for the exemption.

REQUEST FOR INFORMATION. Any information regarding the requirements or the interpretation of any provision of the Contract Documents shall be requested, in writing, and delivered prior to the scheduled date of bid opening. Responses to questions or inquiries having any material effect on the bids shall be made by written addenda sent to all prospective bidders. The Administration will not respond to telephone requests for information concerning this invitation for bids that would materially affect the bid.

Written requests for information or questions shall be addressed to:

Mr. Darrell B. Mobley
District Engineer, District 3
Attention: Kate Mazzara
9300 Kenilworth Avenue
Greenbelt, Maryland
or
FAX to (301) 513-7415

Each request for information or questions shall include the Contract number and the name and address of the originator.

COORDINATION WITH TRANSIT AUTHORITY

The Contractor shall contact the transit authorities listed below prior to beginning construction to Coordinate the temporary relocation or closure of bus stops.

Dave Brlansky
WMATA – Bus Stop and Shelter Coordinator
Office of Planning, 7th Floor
600 5th Street, NW
Washington, D.C. 20001
202-962-1937

Jeff Dunckel
Transit Planner
Division of Transit Services
Montgomery County Department of Public Works and Transportation
101 Monroe Street, 5th Floor
Rockville, MD 20850
Office – 240-777-5826
Cell – 301-646-4086

PAVEMENT PATCHING

Quantity for patching is included in these specifications. The Project Engineer shall contact the Pavement and Geotechnical Division to identify patching locations as needed. Please contact the following for assistance:

Office of Materials Technology
Pavement and Geotechnical Division
7450 Traffic Drive
Hanover, MD 21076
866-926-8501
443-572-5067

RIGHT-OF-WAY STATUS

No additional right-of-way is required under this contract.

REQUIRED PERMITS

The following permits and approvals are anticipated for this project:

Sediment and Erosion Control Approval
Storm Water Management Approval

All Environmental Permits are anticipated by the scheduled Bid Opening.

ADJACENT PROJECTS

It shall be the responsibility of the successful bidder to coordinate his activities with the other ongoing projects adjacent to or in the vicinity of this project.

SEQUENCE OF CONSTRUCTION

1. The contractor shall notify the Maryland Department of the Environment (MDE) at 410-537-3510 a minimum of seven (7) days prior to construction to hold the pre-construction meeting.
2. Install maintenance of traffic control devices, as per the Temporary Traffic Control Typical Applications in the SHA Book of Standards for Highway and Incidental Structures, and as approved by the Engineer.
3. Install sediment control measures as directed by the Engineer.
4. Perform drainage work, ditch work, sign work, and adjust utilities.
5. Perform HMA pavement patches.
6. Perform carbide grinding work (to heel in HMA resurfacing on driveways and in front of curbs only.)
7. Perform loop replacement.

8. Perform HMA resurfacing work.
9. Provide a wedge CR-6 for shoulder edge drop-off where called for in this IFB.
10. Re-stripe roadway with thermoplastic pavement markings.
11. Remove construction equipment, erosion and sediment control measures and maintenance of traffic devices from the project with approval from the inspector.

GENERAL NOTES

A. All paving shall be done to assure positive drainage, and to maintain existing drainage patterns past driveways. The Contractor shall not disturb existing HMA berms along the edge road (that are there to prevent roadway runoff from flowing down driveways.)
B. Existing pavement cross slopes and break points shall be maintained except in areas where wedge and leveling, or varying depth grinding is specified or is directed by the Engineer.
C. The limits of curb replacement and inlet replacement as listed in these special provisions are approximate and shall be field adjusted to meet existing conditions as directed by the Engineer.
D. The Contractor shall maintain all commercial and residential entrances at all times.
E. The Contractor shall maintain in good condition all existing traffic signs. If, in the opinion of the Engineer, any signs are damaged by the Contractor's operation, they are to be replaced by the Contractor at his expense.
F. The Contractor's attention is directed to the item for Hot Mix Asphalt for Maintenance of Traffic. This item is to be used as directed by the Engineer to eliminate drop-offs at inlets, side streets and crossovers. The SHA drop-off policy is in effect at all times.
G. The Contractor must maintain pedestrian safety and access at all times.
H. The contractor shall not patch an area that can not be replaced back to the top of existing pavement and open to traffic by the end of the specified lane closure.
I. Pavement grinding operations shall not begin unless there is sufficient time to resurface the roadway before cold weather. The Contractor shall pave all ground pavement within two weeks of grinding, unless otherwise directed by the Engineer.
J. MD SHA standard plates are to be used for Maintenance of Traffic.
K. The Contractor shall adjust all existing visible manholes, valve boxes, inlets and other structures, as per Specification Section 504.

NOTICE TO CONTRACTOR

EARLY SUBMISSIONS. The last sentence of the first paragraph of TC-5.02, "No work shall be started before receipt of the Notice to Proceed" shall not apply to the following:

After notification to the Contractor from the Administration that the Contractor is the apparent low bidder, the Contractor will be permitted to provide a written request to the Engineer to submit documentation for materials sources and working drawings for any items of work that have a long lead time and could jeopardize the project schedule. Upon written approval from the Engineer the Contractor may submit the applicable documentation to the Engineer.

Should the Contract not be awarded to the apparent low bidder who meets the requirements of the Contract, GP-8.10 will apply for all costs accrued for the preparation and approval of the working drawings and any resultant material purchase approved by the District Engineer and steel fabricated in conformance with the approved working drawings between the date the Contractor received notice of apparent low bidder and the date of notice that the apparent low bidder will not be awarded this Contract.

Should this Contract not be awarded to the apparent low bidder due to failure of the Contractor to comply with all award and execution requirements, all costs accrued for the preparation of the specific items and any resultant material purchased and steel fabrication shall be borne by the Contractor.

Failure of the Contractor to submit the early submissions will not be basis for delaying issuance of the Notice to Proceed or be considered a reason for a time extension.

MDE

MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Boulevard • Baltimore MD 21230
410-537-3000 • 1-800-633-6101

Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor

Shari T. Wilson, Secretary
Robert M. Summers, Ph.D., Deputy Director

APPROVED BY: [signature]
Chief, Sediment & Stormwater Plan Review Division
(Pursuant to Criteria Noted Below)

STORMWATER MANAGEMENT AND
SEDIMENT & EROSION CONTROL APPROVAL
STATE/FEDERAL PROJECTS

MDE NUMBER: **09-SF-0284**

EFFECTIVE DATE: **March 4, 2009**

IN COMPLIANCE WITH: Environment Article, Sections 4-106 and 4-205, Annotated Code of Maryland

APPROVAL IS HEREBY GRANTED: Maryland State Highway Administration

ADDRESS: 707 North. Calvert Street
Baltimore, MD 21202
Attn: Ms. Karuna Pujara, P.E.

HEREINAFTER KNOWN AS OWNER,
FOR THE PLANS AND SPECIFICATIONS PRESENTED FOR CONTRACT NO.: **MQ4295168**

MD 187 – Safety and Resurfacing; From 150' South of Center Drive to North Brook Lane - Montgomery County

PREPARED BY: Maryland State Highway Administration PLANS DATED: December 2008

This APPROVAL is granted subject to the following conditions:

1. This Approval shall become null and void if the construction authorized herein has not begun within two (2) years from the granting of this Approval. If the construction authorized herein has not been completed within five (5) years from the granting of this Approval, the Approval shall become null and void except that these limits may be extended at the discretion of the Department.

2. The Approval is subject to all laws and regulations now in effect and may be revoked if it is subsequently determined that this authorization violates other laws of the State. Construction shall comply with approved terms.

3. The location and dimensions of all Sediment Control structures, excavation and filling shall be in accordance with plans approved by the Department of the Environment Water Management Administration (MDE/WMA). Owner or authorized agent must obtain written approval from the MDE/WMA for any plan modifications or changes. A copy of the approved plan with any approved modifications and this Approval shall be available at the construction site for reference during the construction period.

4. Off-site borrow or waste sites require local county and Soil Conservation District approvals if they are located on private property or MDE/WMA approval if on State or Federal property. Local approval numbers shall be furnished to the MDE/WMA Inspector.

5. The Owner or his authorized agent shall notify the MDE/WMA Compliance Program at (410) 537-3510, at least seven (7) days prior to initiation of the project and five (5) days after work ends.

6. As a Redevelopment Project under Section 3.5 of the Maryland Department of the Environment Stormwater Management Guidelines for State and Federal Projects, July, 2001, Stormwater Management Quantity Requirements do not apply. Stormwater Quality Requirements are met by a Debit of 0.01 Acres applied to the SHA Water Quality Bank in the Potomac River Watershed (02-14-02).

JKT/KML

Post-it® Fax Note 7671 Date 3/12/09 # of pages ▸ 1

To: Karuna Pujara
Co./Dept. SHA H H
Phone #
Fax # 410-209-5031

From: Jim Tracy
Co. MDE/WMA
Phone # 410-537-3566
Fax # 410-537-3553

TERMS AND CONDITIONS

TC SECTION 4
CONTROL OF WORK

TC-4.02 FAILURE TO MAINTAIN PROJECT

98 **ADD:** As a third paragraph.

Additionally, an appropriate deduction will be made from the Contractor's next progress estimate for each day or portion thereof that Maintenance of Traffic deficiencies exist, and will continue until the deficiencies are satisfactorily corrected and accepted by the Engineer. Any portion of a day will be assessed a full day deduction. The deduction will be equal to a prorata share of the lump sum price bid for Maintenance of Traffic or an amount prorated from the Engineer's estimate, whichever is more. The amount prorated will be the per diem amount established by using the working days (based upon calendar dates when required) divided into the total value of the bid item or the Engineer's estimate of that item, whichever is more.

The above noted deduction will be assessed on the next progress estimate if:

The Contractor does not take action to correct the deficiencies and properly assume the responsibilities of maintaining the project (as determined by the Engineer) within four hours of receiving a notice to comply with the required maintenance provisions.

The deduction will be equal to the daily prorated share of the lump sum price bid for Maintenance of Traffic or $500.00 per day, whichever is more for each day or portion thereof that the deficiencies exist, and will continue until the deficiencies and proper assumption of the required maintenance provisions are satisfactorily corrected and accepted by the Engineer. The amount of monies deducted will be a permanent deduction and are not recoverable. Upon satisfactory correction of the deficiencies, payment of the Maintenance of Traffic lump sum item will resume.

TC SECTION 7
PAYMENT

TC-7.09 PRICE ADJUSTMENT FOR DIESEL FUEL

(a) General. A Price Adjustment (PA) will be made to provide additional compensation to the Contractor or a credit to the Administration for the fluctuation in the cost of diesel fuel.

The monthly index price used for calculating the PA will be the On-Highway Diesel Fuel Price for the Central Atlantic Region published by the U.S. Department of Energy, Energy Information Administration, at www.eia.doe.gov. The monthly index price will be the average of the weekly prices posted for the month.

The prevailing base index price will be the price specified for Diesel Fuel currently posted at www.marylandroads.com (Business with SHA/Contracts, Bids, and Proposals) prior to bid opening. A historical database will be maintained by the Administration.

The adjustment factors for specific categories of the work are included in Table TC-7.09. Category __A-E__ will apply to this Contract.

The PA will be calculated when the index for the current month increases or decreases more than 5 percent of the base index. The total dollar amount of fuel adjustment will be limited to 5 percent of the Contract Total Amount as bid. If an increase or decrease in costs exceeds 5 percent of the Contract Total Amount as bid, no further adjustment will be made.

Computations for adjustment will be as follows:

Percent Change = [(E – B)/B] x 100

PA= [E – (B x D)] x F x Q

Where:

PA = Amount of the price adjustment
E = Current monthly index price
B = Prevailing base index price
D = 1.05 when increase is over 5%; 0.95 when decrease is over 5%
F = Applicable fuel adjustment factor from Table TC-7.09
Q = Quantity of individual units of work

TABLE TC-7.09

COST ADJUSTMENT FACTORS FOR DIESEL FUEL			
CATEGORY	**DESCRIPTION**	**UNITS**	**FACTOR**
A	Sum of Cubic Yards of Excavation in Category 200	Gallons/Cubic Yard	0.29
B	Sum of Structure Concrete in Category 400	Gallons/Cubic Yard	1.892
C	Sum of Aggregate Base in Category 500	Gallons per ton	0.60
D	Sum of HMA in Category 500	Gallons per ton	3.50
E	Sum of Rigid Concrete Pavement in Category 500	Gallons/Cubic Yard	0.95

Any difference between the checked final quantity and the sum of quantities shown on the monthly estimates for any item will be adjusted by the following formula:

$$FPA = [(FCQ \div PRQ) - 1] \times EA$$

Where:

FPA = Final PA for the item that increased or decreased
FCQ = Final Checked Quantity of the item
PRQ = Total Quantity of the item reported on the most recent estimate
EA = Total PA of the item shown on most recent estimate

(b) Price Adjustment Criteria and Conditions. The following criteria and conditions will be considered in determining the PA.

(1) Payment. The PA will be computed on a monthly basis. PA resulting in increased payment to the contractor will be paid under the item Price Adjustment for Diesel Fuel. The item amount will be established by the Administration, and shall not be revised by the Contractor. PA resulting in a decreased payment will be deducted from monies owed the Contractor.

The monthly base price for determining a PA for all work performed after the Contract completion date, as revised by an approved time extensions, will be the monthly base price at the time of the Contract completion date (as extended) or at the time the work was performed, whichever is less.

(2) Expiration of Contract Time. When eligible items of work are performed after the expiration of Contract time with assessable liquidated damages, no PA will be made.

(3) Final Quantities. Upon completion of the work and determination of final pay quantities, an adjusting Change Order will be prepared to reconcile any difference between estimated quantities previously paid and the final quantities.

(4) Inspection of Records. The Administration reserves the right to inspect the records of the Contractor to ascertain actual pricing and cost information for the diesel fuel used in the performance of the applicable items of work..

(5) Additional Work. When applicable items of work, as specified herein, are added to the Contract as additional work, in accordance with the Contract provisions, no PA will be made for the fluctuations in the cost of diesel fuel unless otherwise approved by the Engineer. The Contractor shall use current fuel costs when preparing required backup data for work to be performed at a negotiated price.

(6) Force Account. Additional work performed on a force account basis, reimbursement for material, equipment, and man-hours as well as overhead and profit markups will be considered to include full compensation for the current cost of diesel fuel.

CATEGORY 100
PRELIMINARY

SECTION 103 — ENGINEERS OFFICE

103.03 CONSTRUCTION.

144 **DELETE:** 103.03.06 Microcomputer System for all Offices in its entirety.

INSERT: The following.

103.03.06 Microcomputer System for all Offices.

(a) Desktop Unit.

(1) IBM compatible with an Intel or AMD processor.

(2) Minimum microprocessor speed of 3.0 GHz.

(3) Minimum hard drive storage of 80 GB (gigabyte).

(4) Minimum of 2 GB RAM (Random Access Memory).

(5) Enhanced 101 key keyboard with wrist rest.

(6) Super Video Graphics Accelerator (SVGA).

(7) Modem 56K BPS, ITU V.92 compliant – required for remote dial-in to the computer to provide MCMS system administration.

(8) Mouse with mouse pad.

(9) One CD-RW drive [re-writable CD-ROM].

(b) Operating System. Minimum Microsoft® Windows XP – all Microsoft Windows Critical Updates shall be installed prior to computer set up in the field office.

(c) Video Monitor. Flat-Panel LCD Monitor conforming to Energy Star requirements with a minimum screen size of 17 in.

(d) Printer. B&W Laser Jet Printer with a minimum resolution of 1200 DPI (dots per in.) and a minimum of 8 MB of RAM. Inkjets will not be accepted. Printer shall have a minimum print speed of 15 PPM (pages per minute).

(e) Software.

(1) Microsoft® Office 2007 Professional for Windows™ or later.

(2) Symantec® pcAnywhere32 for Windows™ version 12.0 or later.

(3) Antivirus software shall be installed and configured to perform an automatic update when the microcomputer system connects to the internet. Antivirus software approved for SHA web email: *Norton, McAfee, Sophos, or ETrust.

(*Norton Internet Security includes both Antivirus and a Personal Firewall).

(f) Internet Access. The microcomputer system shall be provided with unlimited Internet service approved by the Engineer. Where available internet high-speed service [DSL or cable] must be provided. With DSL or cable internet service an external Router device and firewall software are required to protect the computer from security intrusions. With DSL a Dual Outlet Modular Adapter [single-line RJ11] will be required to connect the DSL modem and the 56k dial-up modem to the same line.

(g) Accessories.

(1) Uninterruptible power supply (UPS).

(2) Standard computer workstation with minimum desk space of 60 X 30 in. and a swivel type office chair, padded with arm rests.

(3) 8-1/2 X 11 in. xerographic paper to be supplied as needed.

(4) Toner or ink as needed for printer.

(5) Maintenance agreement to provide for possible down time.

(6) Physical security system to deter theft of computer components.

(7) Three 1GB USB Flash Drive storage devices.

(8) Blank recordable CD-R media for re-writable CD-ROM drive to be supplied as needed.

(h) Notes.

(1) The microcomputer system shall be completely set up ready for use on or before the day the Engineers office is to be occupied.

(2) All software stated above shall be supplied on original disks with manuals and be retained in the construction field office for the duration of the Contract.

(3) If for any reason the system fails to operate, the system shall be replaced or repaired within 48 hours.

When the microcomputer system is no longer required, the Construction Management software system including original user/operator guide manuals, program disks, and all data files (including those stored on external media: USB flash drives, CD-R's, ZIP disks, etc.) will be removed by the Engineer and delivered to the District Engineer and become the property of the Administration. The remaining microcomputer system shall remain the property of the Contractor.

CATEGORY 100
PRELIMINARY

SECTION 104 — MAINTENANCE OF TRAFFIC

104.01 TRAFFIC CONTROL PLAN (TCP).

104.01.01 DESCRIPTION.

149 **DELETE:** The fourth paragraph "The Contractor shall make...equipment, and debris." in its entirety.

INSERT: The following.

Work Restrictions. The Engineer reserves the right to modify or expand the methods of traffic control or working hours as specified in the Contract Documents. Any request from the Contractor to modify the work restrictions shall require written approval from the Engineer at least 72 hours prior to implementing the change. The Contractor shall submit a copy of the original work restrictions with the written request.

Work is not permitted on Saturdays or Sundays unless otherwise specified by the Engineer.

Work is not permitted on the holidays, or work day preceding and following holidays indicated below with an "X":

- ☒ New Year's Day, January 1
- ☐ Martin Luther King's Birthday, the third Monday in January
- ☐ President's Day, the third Monday in February
- ☒ Good Friday
- ☒ Easter Weekend
- ☒ Memorial Day, the last Monday in May
- ☒ Independence Day, July 4
- ☒ Labor Day, the first Monday in September
- ☐ Columbus Day, the second Monday in October
- ☐ Veteran's Day, November 11
- ☒ Thanksgiving Day, the fourth Thursday in November
- ☒ Christmas Day, December 25

TEMPORARY LANE OR SHOULDER CLOSURE SCHEDULE			
ROADWAY	**# LANE(S) / SHOULDER CAN BE CLOSED**	**DAY OF THE WEEK**	**CLOSURE PERIOD (TIME OF DAY)**
MD 187 from N. Brook Lane to McKinley Street	0/0 0/0 1/0 1/0	Mon - Sun Mon – Fri Mon – Fri Sun - Thurs	5:00AM – 9:00 AM 3:00PM – 9:00 PM 9:00AM – 3:00 PM 9:00 PM – 5:00 AM (Next day)
MD 187 from McKinley Street to Cedar Lane	0/0 0/0 1/0 2/0	Mon - Sun Mon – Fri Mon – Fri Sun - Thurs	5:00AM – 9:00 AM 3:00PM – 9:00 PM 9:00AM – 3:00 PM 9:00 PM – 5:00 AM (Next day)
Night time work: Restricted noise			

150 **ADD:** The following after the last paragraph, "Any monetary savings...and the Administration."

When closing or opening a lane on freeways, expressways, and roadways with posted speed ≥ 55 mph, a work vehicle shall be closely followed by a protection vehicle (PV) during installation and removal of temporary traffic control devices. The PV shall consist of a work vehicle with approved flashing lights, a truck-mounted attenuator (TMA) with support structure designed for attaching the system to the work vehicle, and arrow panel (arrow mode for multilane roadways and caution mode on two-lane, two-way roadways) The work vehicle size and method of attachment shall be as specified in the TMA manufacture's specification as tested under NCHRP Test Level 3.

When a temporary lane or shoulder closure is in effect, work shall begin within one hour after the lane is closed. Any delay greater than one hour with no work in progress shall require the Contractor to remove the lane closure at no additional cost to the

Administration. The Contractor's Traffic Manager shall attend Pre-Construction and Pre-Paving Meetings and shall discuss traffic control and the Traffic Control Plan including procedures to be implemented for lane closures.

All closures shall be in conformance with the approved TCP and under the direction of the Contractor's Traffic Manager and the Engineer.

Workers and equipment, including temporary traffic control devices needed for setting up a lane closure or restriction, are prohibited in the lane or shoulder to be closed or restricted before the time permitted in the Contract work restrictions unless otherwise noted below or as approved by the Engineer.

Temporary traffic control devices to be used for lane/shoulder closure may be placed on the shoulder of the roadway by workers no earlier than 30 minutes prior to actual time lane/shoulder closure or restriction is permitted. Temporary traffic signs may be displayed to traffic at this time.

Workers shall not enter a lane open to traffic. Workers may be present on shoulders to prepare for lane closure setup no earlier than 30 minutes prior to actual time lane/ shoulder closure or restriction is permitted.

All temporary lane or shoulder closures shall be restored at the end of the closure period and no travel lane shall be reduced to less than 10 ft. Prior to opening the closed lane or shoulder, the Contractor shall clear the lane or shoulder of all material, equipment, and debris.

Failure to restore full traffic capacity within the time specified will result in a deduction being assessed on the next progress estimate in conformance with the following. This is in addition to the requirements specified in TC-4.02.

ELAPSED TIME, MINUTES	DEDUCTION
1 - 5	$ 50.00
Over 5	$ 50.00 per Minute (In addition to the Original 5 minutes)

CATEGORY 100
PRELIMINARY

SECTION 104 — MAINTENANCE OF TRAFFIC

166 **DELETE**: Section 104.11 TEMPORARY PAVEMENT MARKINGS. in its entirety.

INSERT: The following.

104.11 TEMPORARY PAVEMENT MARKINGS.

104.11.01 DESCRIPTION. Furnish, install, and remove temporary pavement markings as specified in the Contract Documents or as directed by the Engineer. These markings shall include lines, letters, numbers, arrows, and symbols.

104.11.02 MATERIALS.

Removable Preformed Pavement Marking Material	Refer to the
Nontoxic Lead Free Waterborne Pavement Markings	Contract Documents
Black Out Tape	QPL

104.11.03 CONSTRUCTION.

104.11.03.01 Quality Assurance/Quality Control. Quality control testing shall be completed by the Contractor's Administration certified technicians. The Engineer will complete the quality assurance checks in conformance with MSMT 729 by performing the Nighttime Visibility Evaluations.

104.11.03.02 Warranty Period. The Contractor shall maintain and be responsible for any defects in the pavement markings for a period of 180 days from the date of application. The Contractor shall replace the pavement markings as necessary within this period as directed by the Engineer at no additional cost to the Administration. Refer to GP-5.11.

104.11.03.02 Application and Removal. The pavement markings shall be applied in conformance with the manufacturer's recommendations and the Contract Documents. Markings shall be applied in the same direction as the flow of traffic. The markings shall be located as specified in the Contract Documents or as directed by the Engineer.

Pavement markings may be applied to either new or existing paved surfaces. When applied to newly paved surfaces, the markings shall be placed before traffic is allowed on the pavement. Nontoxic lead free waterborne pavement markings shall be used for all temporary pavement markings except for the final surface. However, the Contractor may use removable preformed pavement markings at no additional cost to the Administration.

When at the "end of season", the temperatures are too low to allow the placement of removable tape on the final surface, a written exception request may be submitted to the Engineer to allow the use of nontoxic lead free waterborne paint in lieu of removable tape until the following striping season.

When it is appropriate to shift lanes, all nonapplicable pavement markings within the travel way and adjacent to the travel way as directed by the Engineer shall be completely removed.

Surface Condition. Prior to application of pavement markings, the pavement surface shall be clean, dry, and free of all contaminants, including curing compound, dirt, and loose particles. Residual pavement markings shall be removed. Loose or poorly constructed markings shall also be removed.

Pavement Marking Removal. All removable preformed pavement markings shall be completely removed prior to application of the permanent markings. On stage construction or final surfaces of portland cement concrete pavements, any objectionable adhesive residue shall be removed by water blasting or other methods as may be approved by the Engineer. Open flame is prohibited to remove adhesive residue, or any pavement markings. The Contractor shall remove all nonapplicable pavement markings so that there is no damage to the existing or final surface.

Retroreflectance. The initial retroreflectance readings for temporary pavement markings shall be a minimum of 250 and 150 millicandellas/lux/square meter for white and yellow, respectively. The Engineer will monitor the pavement markings in conformance with MSMT 729 during the Contractor's 180 day period of responsibility.

104.11.04 MEASUREMENT AND PAYMENT. Payment for Removable Preformed Pavement Markings, Removal of Removable Preformed Pavement Markings, Nontoxic Lead Free Waterborne Pavement Marking Paint, and the Removal of Existing Pavement Markings will be measured and paid for using one or more of the items listed below and as specified in the Contract Documents.

The payment will be full compensation for furnishing, placing, complete removal of lines, letters, numbers, arrows, symbols, and the removal of all residue. In addition, payment will cover maintenance and replacement during the 180 day period, and for all material, labor, equipment, tools, and incidentals necessary to complete the work. Removal and replacement of temporary pavement markings required beyond the 180 day period will be measured and paid for at the Contract unit price for the pertinent temporary pavement marking item.

Temporary markings replaced during the 180 day period as a result of plowing (as determined by the Engineer) will be paid for at the Contract unit price for the pertinent temporary marking item.

(a) Nontoxic Lead Free Waterborne Pavement Marking Paint-in width specified-per linear foot.

(b) Removable Preformed Pavement Line Markings-in width specified-per linear foot.

(c) Removable Preformed Letters, Symbols, Arrows, and Numbers per each.

(d) Removal of Removable Preformed Pavement Markings-any width-per linear foot.

(e) Removal of Removable Preformed Letters, Symbols, Arrows and Numbers per each.

(f) Removal of Existing Pavement Line Markings-any width per linear foot.

(g) Removal of Existing Letters, Symbols, Arrows, and Numbers per each.

(h) Black Out Tape Lines-in width specified-per linear foot.

(i) Removal of Black Out Tape Lines-any width-per linear foot.

CATEGORY 100
PRELIMINARY

SECTION 104 — MAINTENANCE OF TRAFFIC

104.21 CELLULAR TELEPHONES.

104.21.01 DESCRIPTION. Furnish and maintain new or like new cellular telephones for use by the appropriate Administration personnel. Each telephone shall be furnished with a hands-free device and be delivered to the Engineer at time of Notice to Proceed, fully activated and operational. They shall remain operational until returned to the Contractor at final acceptance of the entire project in conformance with GP-5.13.

104.21.02 MATERIALS.

Cellular Telephones	As approved by the Engineer

104.21.03 CONSTRUCTION. Not applicable.

104.21.04 MEASUREMENT AND PAYMENT. The number of cellular telephones required for this Contract is Two (2). The cellular telephones will not be measured but will be incidental to the Contract price for Maintenance of Traffic unless otherwise specified in the Contract Documents. The payment will be full compensation for furnishing the telephones and hands-free devices, activation fees, battery replacement, monthly service fees, extended coverage charges, air time (peak and nonpeak time per minute), roaming rates, long distance fees in conformance with the schedules provided, and for all material, labor, equipment, tools, and incidentals necessary to complete the work. If any of the telephones become defective, are stolen, or for any other reasons do not function as intended, they shall be replaced in-kind at no additional cost to the Administration. Nonfunctioning or stolen telephones shall be replaced within eight hours after the Contractor is notified by the Engineer.

Ownership of the telephones will remain with the Contractor. The Administration assumes no responsibility or liability for the condition of the telephones when they are returned.

CATEGORY 100
PRELIMINARY

SECTION 104 — MAINTENANCE OF TRAFFIC

104.31 ACCESSIBLE PEDESTRIAN MAINTENANCE OF TRAFFIC.

104.31.01 DESCRIPTION. Provide and maintain an accessible pedestrian route, to the "maximum extent feasible", throughout the project's limits. When an existing pedestrian access route within the public right of way is blocked by construction, alteration, or maintenance activity, an alternate accessible pedestrian route shall be provided.

The phrase to the "maximum extent feasible" applies in areas where the nature of an existing facility or site conditions makes it virtually impossible to comply fully with applicable accessibility standards through a planned alteration. In these circumstances, the alternate accessible pedestrian route shall provide the maximum physical accessibility that is feasible, or a design waiver must be approved by SHA's Office of Highway Development.

104.31.02 MATERIALS. Not applicable

104.31.03 CONSTRUCTION. The following considerations shall be taken into account when addressing accessible pedestrian maintenance of traffic:

(a) All pedestrians, including persons with disabilities, shall be provided with a reasonably safe, convenient and accessible path that replicates as much as practicable the existing pedestrian facilities.

(b) The width of the existing pedestrian facility should be maintained if practical. When it is not possible to maintain a minimum width of 60 in. throughout the entire length of the pedestrian route, a minimum width of 36 in. shall be provided with 60 x 60 in. passing zones at least every 200 ft, to allow individuals in wheelchairs to pass.

(c) Traffic control devices and other construction materials and features shall not intrude into the usable width of the sidewalk, temporary pathway or other pedestrian facility.

(d) Signs and other devices mounted lower than 7 ft above the temporary pedestrian pathway shall not project more than 4 in. into accessible pedestrian route.

(e) A smooth, continuous hard surface shall be provided throughout the entire length and width of the pedestrian route throughout construction. There shall be no curbs or vertical elevation changes greater than 1/4 in. in grade or terrain that could cause tripping or be a barrier to wheelchair use. Vertical elevation differences between 1/4 in. and 1/2 in. shall be beveled at a maximum 2:1 slope. The slip resistance coefficient is .80 minimum using test method C 1028 (dry method).

(f) When channelization is used to delineate a pedestrian pathway, a continuous detectable edging should be provided throughout the length of the facility such that pedestrians using a white cane can follow it. Edging should protrude at least 6 in. above the surface of the sidewalk or pathway with the bottom of the edging a maximum of 2.5 in. above the surface

(g) Temporary ramps shall be provided when an alternate pedestrian route crosses a curb and no permanent ramps are in place. The width of the ramp shall be a minimum of 36 in. and the slope of the ramp shall not exceed 10:1. Temporary detectable warning mats must be installed at street crossings and signalized entrances. The slip resistance coefficient is .80 minimum using test method C 1028 (dry method).

(h) When possible, an accessible pedestrian route shall be provided on the same side of the street as the disrupted route. When it is not feasible to provide a same-side accessible pedestrian route an accessible pedestrian detour route shall be provided.

(i) Information regarding closed pedestrian routes, alternate crossings, and sign and signal information shall be communicated to pedestrians with visual disabilities by providing devices such as audible information devices, accessible pedestrian signals or barriers and channelizing devices that are detectable to the pedestrians traveling with the aid of a white cane or who have low vision.

(j) It is desirable that pedestrians cross to the opposite side of the roadway at intersections rather than mid-block. Appropriate signing shall be placed at the intersections.

(k) Access to transit stops shall be provided and maintained at all times.

104.31.04 MEASUREMENT AND PAYMENT. Unless otherwise specified, Accessible Pedestrian Maintenance of Traffic will not be measured but the cost will be incidental to the Lump Sum item for Maintenance of Traffic.

CATEGORY 100
PRELIMINARY

SECTION 107 CONSTRUCTION STAKEOUT

195 **107.03 CONSTRUCTION.**

ADD: 107.03.10 Highway Traffic Signals. For installation of Highway Traffic Signals, arrange a meeting with the Engineer and representatives from the Traffic Operations Division to stakeout all items indicated on the sketches, plans, and in the Special Provisions. This meeting shall occur prior to any work after the notice to proceed. No work shall proceed before the stakeout is approved by the Engineer.

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199 **107.04 MEASUREMENT AND PAYMENT.**

ADD: Intersection Utility Stakeout. Intersection Utility Stakeout for Traffic Control Devices will not be measured but the cost will be incidental to other pertinent items specified in the Contract Documents.

CATEGORY 100
PRELIMINARY

SECTION 113 — DIGITAL CAMERA

113.01 DESCRIPTION. Furnish a new or like new digital camera with a Color Inkjet Printer for use by Administration personnel. The digital camera and printer shall be delivered to the Engineer at the time of the Notice to Proceed. They shall remain operational and not be returned to the Contractor until final acceptance of the entire project, in conformance with GP-5.13.

113.02 MATERIALS.

(a) Digital Camera. The digital camera shall meet the following requirements and be furnished with the specified accessories:

(1) Windows 2000, ME, XP compatible operating system

(2) Photo Suite, Photo Deluxe, Picture Works, Photo Shop, or similar Photo Managing Software

(3) 4.0 megapixel image resolution (minimum)

(4) 3X optical zoom (minimum)

(5) Two (2) sets of rechargeable batteries

(6) SmartMedia Card or memory stick (512 MB minimum)

(7) Pop-up or built-in flash modes

(8) All items required for quick downloading

(9) Auto-quick focus

(10) Lens Cover, Shoulder Strap, and Carrying Case

(11) AC adapter and Battery Charger

(b) Color Inkjet Printer. The printer shall conform to the following minimum requirements:

(1) Resolution of 2400 x 1200 DPI (dots per inch).

(2) Print speed of 17 PPM (pages per minute) for black and white and 13 PPM for color.

(3) Memory 8 MB.

(4) Duty cycle of 5000 pages/month.

Office-jets and Bubble-jets will not be accepted.

113.03 CONSTRUCTION. Not applicable.

113.04 MEASUREMENT AND PAYMENT. The digital camera will not be measured but the cost will be incidental to the Contract price for Maintenance of Traffic unless otherwise specified in the Contract Documents. If the digital camera or printer becomes defective, is stolen, or for any other reason does not function as intended, it shall be replaced with an approved camera or printer at no additional cost to the Administration. A nonfunctioning or stolen camera or printer shall be replaced within eight hours after the Engineer notifies the Contractor.

Ownership of the camera and printer will remain with the Contractor. The Administration assumes neither responsibility nor liability for the condition of the camera when returned.

CATEGORY 100
PRELIMINARY

SECTION 104 — MAINTENANCE OF TRAFFIC

166 **DELETE**: Section 104.11 TEMPORARY PAVEMENT MARKINGS. in its entirety.

INSERT: The following.

104.11 TEMPORARY PAVEMENT MARKINGS.

104.11.01 DESCRIPTION. Furnish, install, and remove temporary pavement markings as specified in the Contract Documents or as directed by the Engineer. These markings shall include lines, letters, numbers, arrows, and symbols.

104.11.02 MATERIALS.

Removable Preformed Pavement Marking Material	Refer to the
Nontoxic Lead Free Waterborne Pavement Markings	Contract Documents
Black Out Tape	QPL

104.11.03 CONSTRUCTION.

104.11.03.01 Quality Assurance/Quality Control. Quality control testing shall be completed by the Contractor's Administration certified technicians. The Engineer will complete the quality assurance checks in conformance with MSMT 729 by performing the Nighttime Visibility Evaluations.

104.11.03.02 Warranty Period. The Contractor shall maintain and be responsible for any defects in the pavement markings for a period of 180 days from the date of application. The Contractor shall replace the pavement markings as necessary within this period as directed by the Engineer at no additional cost to the Administration. Refer to GP-5.11.

104.11.03.02 Application and Removal. The pavement markings shall be applied in conformance with the manufacturer's recommendations and the Contract Documents. Markings shall be applied in the same direction as the flow of traffic. The markings shall be located as specified in the Contract Documents or as directed by the Engineer.

Pavement markings may be applied to either new or existing paved surfaces. When applied to newly paved surfaces, the markings shall be placed before traffic is allowed on the pavement. Nontoxic lead free waterborne pavement markings shall be used for all temporary pavement markings except for the final surface. However, the Contractor may use removable preformed pavement markings at no additional cost to the Administration.

When at the "end of season", the temperatures are too low to allow the placement of removable tape on the final surface, a written exception request may be submitted to the Engineer to allow the use of nontoxic lead free waterborne paint in lieu of removable tape until the following striping season.

When it is appropriate to shift lanes, all nonapplicable pavement markings within the travel way and adjacent to the travel way as directed by the Engineer shall be completely removed.

Surface Condition. Prior to application of pavement markings, the pavement surface shall be clean, dry, and free of all contaminants, including curing compound, dirt, and loose particles. Residual pavement markings shall be removed. Loose or poorly constructed markings shall also be removed.

Pavement Marking Removal. All removable preformed pavement markings shall be completely removed prior to application of the permanent markings. On stage construction or final surfaces of portland cement concrete pavements, any objectionable adhesive residue shall be removed by water blasting or other methods as may be approved by the Engineer. Open flame is prohibited to remove adhesive residue, or any pavement markings. The Contractor shall remove all nonapplicable pavement markings so that there is no damage to the existing or final surface.

Retroreflectance. The initial retroreflectance readings for temporary pavement markings shall be a minimum of 250 and 150 millicandellas/lux/square meter for white and yellow, respectively. The Engineer will monitor the pavement markings in conformance with MSMT 729 during the Contractor's 180 day period of responsibility.

104.11.04 MEASUREMENT AND PAYMENT. Payment for Removable Preformed Pavement Markings, Removal of Removable Preformed Pavement Markings, Nontoxic Lead Free Waterborne Pavement Marking Paint, and the Removal of Existing Pavement Markings will be measured and paid for using one or more of the items listed below and as specified in the Contract Documents.

The payment will be full compensation for furnishing, placing, complete removal of lines, letters, numbers, arrows, symbols, and the removal of all residue. In addition, payment will cover maintenance and replacement during the 180 day period, and for all material, labor, equipment, tools, and incidentals necessary to complete the work. Removal and replacement of temporary pavement markings required beyond the 180 day period will be measured and paid for at the Contract unit price for the pertinent temporary pavement marking item.

Temporary markings replaced during the 180 day period as a result of plowing (as determined by the Engineer) will be paid for at the Contract unit price for the pertinent temporary marking item.

(a) Nontoxic Lead Free Waterborne Pavement Marking Paint-in width specified-per linear foot.

(b) Removable Preformed Pavement Line Markings-in width specified-per linear foot.

(c) Removable Preformed Letters, Symbols, Arrows, and Numbers per each.

(d) Removal of Removable Preformed Pavement Markings-any width-per linear foot.

(e) Removal of Removable Preformed Letters, Symbols, Arrows and Numbers per each.

(f) Removal of Existing Pavement Line Markings-any width per linear foot.

(g) Removal of Existing Letters, Symbols, Arrows, and Numbers per each.

(h) Black Out Tape Lines-in width specified-per linear foot.

(i) Removal of Black Out Tape Lines-any width-per linear foot.

CLASS 2 EXCAVATION

Station	Alignment	Offset	Location/Description	CY
11+30	MD 187	Lt.	Remove ex. sidewalk ramp	2
19+40	MD 187	Lt.	Remove ex. sidewalk ramp	1
19+40	MD 187	Rt.	Remove ex. sidewalk ramp	1
19+80	MD 187	Rt.	Remove ex. sidewalk ramp	2
22+35	MD 187	Lt.	Remove ex. sidewalk ramp	2
30+60	MD 187	Lt.	Remove ex. sidewalk ramp	2
30+75	MD 187	Rt.	Remove ex. sidewalk ramp	5
31+50	MD 187	Rt.	Remove ex. sidewalk ramp	9
			Quantity	**25**

STANDARD TYPE S INLET WITH CURVED VANE GRATE, DOUBLE GRATE - MINIMUM DEPTH

Station	Alignment	Offset	Location/Description	EA
5+88	MD 187	Right	Replace existing Inlet	1
5+88	MD 187	Left	Replace existing Inlet	1
7+77	MD 187	Left	Replace existing Inlet	1
9+85	MD 187	Right	Replace existing Inlet	1
9+85	MD 187	Left	Replace existing Inlet	1
11+20	MD 187	Right	Replace existing Inlet	1
11+70	MD 187	Right	Replace existing Inlet	1
13+50	MD 187	Right	Replace existing Inlet	1
18+95	MD 187	Right	Replace existing Inlet	1
19+06	MD 187	Left	Replace existing Inlet	1
22+06	MD 187	Left	Replace existing Inlet	1
22+92	MD 187	Left	Replace existing Inlet	1
25+46	MD 187	Right	Replace existing Inlet	1
25+46	MD 187	Left	Replace existing Inlet	1
34+34	MD 187	Right	Replace existing Inlet	1
34+48	MD 187	Left	Replace existing Inlet	1
37+35	MD 187	Right	Replace existing Inlet	1
39+24	MD 187	Left	Replace existing Inlet	1
39+30	MD 187	Right	Replace existing Inlet	1
39+90	MD 187	Right	Replace existing Inlet	1
40+30	MD 187	Left	Replace existing Inlet	1
44+30	MD 187	Left	Replace existing Inlet	1
44+50	MD 187	Right	Replace existing Inlet	1
44+50	MD 187	Right	Replace existing Inlet	1
			Quantity	**24**

MODIFIED MIX 6 CONCRETE FOR MISCELLANEOUS STRUCTURES

Station	Alignment	Offset	Location/Description	C.Y.
5+88	MD 187	Right	Concrete collar at new inlet	.6
5+88	MD 187	Left	Concrete collar at new inlet	.6
7+77	MD 187	Left	Concrete collar at new inlet	.6
7+77	MD 187	Right	Concrete collar at new inlet	.6
9+85	MD 187	Right	Concrete collar at new inlet	.6
9+85	MD 187	Left	Concrete collar at new inlet	.6
11+20	MD 187	Right	Concrete collar at new inlet	.6
11+70	MD 187	Left	Concrete collar at new inlet	.6
11+70	MD 187	Right	Concrete collar at new inlet	.6
13+50	MD 187	Right	Concrete collar at new inlet	.6
13+72	MD 187	Left	Concrete collar at new inlet	.6
18+95	MD 187	Right	Concrete collar at new inlet	.6

MODIFIED MIX 6 CONCRETE FOR MISCELLANEOUS STRUCTURES

Station	Alignment	Offset	Location/Description	C.Y.
19+06	MD 187	Left	Concrete collar at new inlet	.6
21+66	MD 187	Left	Concrete collar at new inlet	.6
22+06	MD 187	Left	Concrete collar at new inlet	.6
22+72	MD 187	Right	Concrete collar at new inlet	.6
22+92	MD 187	Left	Concrete collar at new inlet	.6
25+46	MD 187	Right	Concrete collar at new inlet	.6
25+46	MD 187	Left	Concrete collar at new inlet	.6
34+34	MD 187	Right	Concrete collar at new inlet	.6
34+48	MD 187	Left	Concrete collar at new inlet	.6
37+35	MD 187	Right	Concrete collar at new inlet	.6
37+65	MD 187	Left	Concrete collar at new inlet	.6
39+24	MD 187	Left	Concrete collar at new inlet	.6
39+30	MD 187	Right	Concrete collar at new inlet	.6
39+90	MD 187	Right	Concrete collar at new inlet	.6
40+30	MD 187	Left	Concrete collar at new inlet	.6
44+30	MD 187	Left	Concrete collar at new inlet	.6
44+50	MD 187	Right	Concrete collar at new inlet	.6
44+50	MD 187	Right	Concrete collar at new inlet	.6
			Quantity	**18**

STANDARD TYPE S COMINATION INLET WITH CURVED VANE GRATE, DOUBLE GRATE - MINIMUM DEPTH

Station	Alignment	Offset	Location/Description	EA
7+77	MD 187	Right	Replace existing Inlet	1
11+70	MD 187	Left	Replace existing Inlet	1
13+72	MD 187	Left	Replace existing Inlet	1
21+66	MD 187	Left	Replace existing Inlet	1
22+72	MD 187	Right	Replace existing Inlet	1
37+65	MD 187	Left	Replace existing Inlet	1
			Quantity	**6**

CATEGORY 300
DRAINAGE

SECTION 308 — EROSION AND SEDIMENT CONTROL

308.01 DESCRIPTION.

308.01.04 Incentive/Liquidated Damages Payments.

Delete: The entire paragraph.

INSERT: The following.

The total incentive awarded for this Contract will not exceed $0. The rating quarter incentive payment for this contract is $0. A final incentive payment for this contract is $0 less the total quarterly incentives paid during a contract extension.

For each day that the project has a 'D' rating, liquidated damages will be imposed in the amount of $3,904 per day. Failure to upgrade the project to the minimum of a 'B' rating within 72 hours will result in the project being rated 'F'.

For each day that the project has an 'F' rating, liquidated damages will be imposed in the amount of $4,897 per day.

CATEGORY 300
DRAINAGE

SECTION 308 — EROSION AND SEDIMENT CONTROL

308.01 DESCRIPTION.

253 **ADD:** The following after the third paragraph.

General Notes.

(a) MDE Notification. If an Erosion and Sediment Control Permit is issued for this project, notify the Administration and MDE in writing or by telephone (410) 537-3510 at the following points:

(1) Pre-construction meeting.

(2) Erosion and sediment control meeting (minimum 7 working days prior to commencing earth disturbing activities).

(3) Following installation of initial sediment control measures.

(4) During installation of major sediment control basins/traps.

(5) Prior to removal or modification of any sediment control structures.

(6) Prior to removal of all sediment control devices.

(7) Prior to final acceptance by the Administration.

(b) Ingress/Egress Controls. Protect all points of construction ingress and egress to prevent the deposition of materials on public roads. Immediately remove all materials deposited on public roads. The flushing of road surfaces is prohibited.

Control all ingress and egress points through the use of a stabilized construction entrance conforming to 308.03.30.

(c) Inspection. Inspect all erosion and sediment control measures daily and maintain continuously in an effective operating condition.

(d) Shutdowns and/or Penalties. Total compliance with the approved erosion and sediment control plan is expected at all times. In cases where the Contractor is found to be in non-compliance, the Administration may take steps to impose selected or total shutdowns and impose per day penalties for non-compliance.

The Administration may impose a total or partial shutdown if the project may adversely impact the waters of the State.

(e) Record Keeping. Make the project's approval letter, approved erosion and sediment control plans, approved change requests, daily log books and test reports available on-site for inspection by duly authorized officials of MDE.

(f) Erosion and Sediment Control Excavation. Place silt removed from control devices in an approved waste site either on or off the project. Material stored on-site may be reused once it is dried and if it conforms to the Administration's requirements for embankment or any unspecified need.

(g) Off-Site Utility Work. Follow these additional best management practices for sediment control for utility construction in areas outside of designed controls:

(1) Call "Miss Utility" at 1-800-257-7777 48 hours prior to the start of work.

(2) Place excavated material on the high side of the trench.

(3) Backfill, compact and stabilize trenches for utility installations at the end of each working day. When this is not possible, follow (4).

(4) Place temporary silt fences immediately downstream of any disturbed area intended to remain disturbed for more than one day.

(h) Sensitive Areas. No construction activities are allowed within specified sensitive areas of the project without prior notification of the Engineer. Designate a responsible party to monitor all work in these areas to assure that reasonable care is taken in or adjacent to these areas. Areas considered sensitive are defined as: floodplains, wetlands (tidal, nontidal and associated buffers) critical areas, forested areas, archeological sites, historic sites, parkland, and open water.

(i) Standard Stabilization Note. Following initial soil disturbance or redisturbance, complete permanent or temporary stabilization within seven (7) calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than 3 horizontal to 1 vertical (3:1); and fourteen days (14) as to all other disturbed or graded areas on the project site.

(j) Site Information (Not for Bidding Purposes).

(1) Total area of site	8 acres
(2) Area disturbed	.24 acres
(3) Area to be roofed or paved	0.00 acres
(4) Total cut	20 cubic yards
(5) Total fill	20 cubic yards

(6) Off-site waste/borrow area location (if known)

(k) Incremental Stabilization. Refer to the current Maryland Standards and Specifications for Soil Erosion and Sediment Control for the incremental stabilization of cuts and fills.

(l) Disturbed Areas. Place excavated trench material for any storm drain pipe and underdrain pipe installation on the high side of the trench. Backfill, compact, and stabilize trenches for any storm drain pipe and underdrain pipe installations at the end of each working day.

Stabilize all other disturbed areas at the end of the working day. Place silt fence downgrade of any areas that cannot be stabilized at the end of the work day such that all runoff from the disturbed area will be filtered.

(m) **Removal of Controls.** Establish permanent stabilization for all contributory disturbed areas and obtain permission from MDE and the Administration prior to prior to the removal of sediment control measures.

Immediately stabilize any areas disturbed by the removal of sediment control measures.

(n) **Notice of Enforcement.** Sediment and erosion control regulations will be strictly enforced.

308.05 DESIGN CERTIFICATION

Insert: The following:

ENVIRONMENTAL INFORMATION

MDE # 09-SF-0284

DESIGN CERTIFICATION

"I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, THE 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUMES I & II, AND THE MARYLAND DEPARTMENT OF THE ENVIRONMENT EROSION AND SEDIMENT AND STORMWATER MANAGEMENT REGULATIONS."

Donald J. Weaver, P.E.	Donald J. Weaver
NAME	SIGNATURE
20454	January 5, 2009
MARYLAND REGISTRATION NUMBER	DATE
(P.E.), R.L.S. OR R.L.A. (circle)	

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 20454, EXPIRATION DATE: 5/19/2010."

10-31-08

CATEGORY 300
DRAINAGE

SECTION 308 — EROSION AND SEDIMENT CONTROL

308.01 DESCRIPTION.

242 **DELETE:** The third paragraph, "The Contractor shall…Control Manager (ESCM)."

INSERT: The following.

The Contractor shall assign an employee to the project to serve in the capacity of Erosion and Sediment Control Manager (ESCM). The ESCM and the superintendent shall have successfully completed the Administration's Erosion and Sediment Control Certification Training for Contractors and Inspectors. This certification shall be current at all times. If the certification is expired or revoked for either person, the Contractor shall immediately replace the person with an appropriately certified person acceptable to the Administration.

ADD: The following after the third paragraph.

General Notes.

(a) MDE Notification. If an Erosion and Sediment Control Permit is issued for this project, the Contractor or the Administration shall notify MDE in writing or by telephone (410) 537-3510 at the following points:

(1) Pre-construction meeting.

(2) Erosion and sediment control meeting (minimum 7 working days prior to commencing earth disturbing activities).

(3) Following installation of initial sediment control measures.

(4) During installation of major sediment control basins/traps.

(5) Prior to removal or modification of any sediment control structures.

(6) Prior to removal of all sediment control devices.

(7) Prior to final acceptance by the Administration.

(b) Ingress/Egress Controls. The Contractor shall protect all points of construction ingress and egress to prevent the deposition of materials on public roads. All materials deposited on public roads shall be mechanically removed immediately. The flushing of road surfaces is prohibited.

Typically, all ingress and egress points shall be controlled through the use of a stabilized construction entrance conforming to 308.03.30.

(c) Inspection. The Contractor shall inspect daily and maintain continuously in an effective operating condition all erosion and sediment control measures.

(d) Shutdowns and/or Penalties. Total compliance with the approved erosion and sediment control plan is expected at all times. In cases where the Contractor is found to be in noncompliance the Administration may take steps to impose selected or total shutdowns and impose per day penalties for noncompliance.

The District Engineer may impose a total or partial shutdown if the project may adversely impact the waters of the State.

(e) Record Keeping. The project's approval letter, approved erosion and sediment control plans, approved change requests, daily log books and test reports shall be available at the site for inspection by duly authorized officials of MDE.

(f) Erosion and Sediment Control Excavation. Silt removed from control devices shall be placed in an approved waste site either on or off the project. Material stored on site may be reused once it is dried and if it conforms to the Administration's requirements for embankment or any unspecified need.

(g) Off-Site Utility Work. Sediment control for utility construction in areas outside of designed controls shall follow these additional best management practices:

(1) Call "Miss Utility" at 1-800-257-7777 48 hours prior to the start of work.

(2) Excavated material shall be placed on the high side of the trench.

(3) Trenches for utility installations shall be backfilled, compacted and stabilized at the end of each working day. When this is not possible, the area shall conform to (4).

(4) Temporary silt fences shall be placed immediately downstream of any disturbed area intended to remain disturbed for more than one day.

(h) Sensitive Areas. No construction activities shall be undertaken within specified sensitive areas of the project without prior notification of the Engineer. All work in these areas shall be monitored by a responsible party designated by the Contractor to assure that reasonable care is taken in or adjacent to these areas. Areas considered sensitive are defined as: floodplains, wetlands (tidal, nontidal and associated buffers) critical areas, forested areas, archeological sites, historic sites, parkland, and open water.

(i) Standard Stabilization Note. Following initial soil disturbance or redisturbance, permanent or temporary stabilization shall be completed within seven (7) calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than 3 horizontal to 1 vertical (3:1); and fourteen days (14) as to all other disturbed or graded areas on the project site.

(j) Site Information (Not for Bidding Purposes).

(1) Total Area of Site	acres
(2) Area disturbed	0.24 acre
(3) Area to be Roofed or Paved	0.23 acre
(4) Total cut	20 cubic yards
(5) Total fill	20 cubic yards
(6) Off-site waste/borrow area location (if known)	

(k) Incremental Stabilization. Refer to the current Maryland Standards and Specifications for Soil Erosion and Sediment Control for the incremental stabilization of cuts and fills.

(l) Disturbed Areas. Excavated trench material for any storm drain pipe and underdrain pipe installation shall be placed on the high side of the trench. Trenches for any storm drain pipe and underdrain pipe installations shall be backfilled, compacted, and stabilized at the end of each working day.

All other disturbed areas shall also be stabilized at the end of the working day. Any areas that cannot be stabilized at the end of the work day are to have silt fence placed downgrade of them such that all runoff from the disturbed area will be filtered.

(m) Additional Controls. The MDE Inspector or the Administration's Engineer may require additional controls. In that event, the Contractor shall inspect daily and maintain continuously in an effective operating condition all erosion and sediment control measures until they are removed with prior permission from MDE and the Administration. Prior to the removal of sediment control measures, the Contractor shall have established permanent stabilization for all contributory disturbed areas.

Any areas disturbed by the removal of sediment control measures shall be immediately stabilized.

(n) Notice of Enforcement. Sediment and erosion control regulations shall be strictly enforced during construction.

DELETE: 308.01.01 Standards and Specifications in its entirety.

INSERT: The following.

308.01.01 Standards and Specifications. The plans are designed and shall be constructed in accordance with the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control, the 2000 Maryland Stormwater Design Manual, Volumes I and II and the Maryland Department of the Environment Erosion and Sediment Control and Stormwater Management regulations and all revisions thereof, and as specified in the Contract Documents. The Contractor shall keep a copy of the latest MDE Standards and Specifications for Soil Erosion and Sediment Control on the site at all times.

243 **DELETE:** 308.01.02 Quality Assurance Ratings in its entirety.

INSERT: The following.

308.01.02 Quality Assurance Ratings. All Administration projects requiring Erosion and Sediment Control measures will be inspected by a Quality Assurance Inspector to ensure compliance with the approved Erosion and Sediment Control Plan. The Contractor shall obtain all appropriate permits and approvals; demarcate Limits of Disturbances, wetland and wetland buffers, floodplains and tree protection areas as specified in Section 107; and shall proceed in conformance with the approved Erosion and Sediment Control Plan and schedules. Projects will be inspected at least every 2 weeks and the scores reported on Form No. OOC61, Erosion and Sediment Control Field Investigation report. The Quality Assurance Inspector will use the scores to determine the following ratings:

RATING	SCORE
A	≥ 90
B	80 - 89.9
C	70 - 79.9
D	60 - 69.9
F	< 60

Rating A. The project is in compliance. Minor corrective action may be necessary.

Rating B. Indicates that the project is in compliance; however, corrective action is needed

Rating C. Indicates that the project is in compliance; however, deficiencies noted require correction. Shutdown conditions as described elsewhere herein could arise quickly. Project will be reinspected within 72 hours.

Rating D. Indicates that the project is in noncompliance. The Administration will shut down all earthwork operations. All work efforts shall focus on correcting erosion and sediment control deficiencies. The project will be reinspected within 72 hours. All required corrective actions shall be completed within the 72 hour period for the project to be upgraded to a 'B' rating. Failure to upgrade the project to a 'B' rating will result in the project being rated an 'F'. Liquidated damages will be imposed for each day the project has a 'D' rating. Refer to Shutdowns elsewhere in this Specification for additional requirements.

Rating F. Indicates a score less than 60 or the appropriate permits and approvals have not been obtained; demarcated limits of disturbances, wetland and wetland buffers, floodplains, and tree protection areas as specified in Section 107; or is not proceeding in conformance with the approved Erosion and Sediment Control Plan and schedules. An 'F' rating indicates that the project is in noncompliance. The Administration will shut down the entire project until the project receives a 'B' rating. All work efforts shall focus on correcting erosion and sediment control deficiencies. Liquidated damages will be imposed for each day the project has an 'F' rating.

Shutdowns. When a 'C' rating is given to a project, the Contractor shall have all deficiencies corrected within 72 hours. The project will be reinspected at the end of this period. If it is found that the deficiencies have not been satisfactorily corrected, a 'D' rating will be given and all earthwork operations will be shut down until the project receives a 'B' rating.

When a consecutive 'C' rating is given for other deficiencies and the original deficiencies were corrected, the Contractor will be alerted that their overall effort is marginal and a shut down of all earthwork operations is imminent if erosion and sediment control efforts do not substantially improve within 72 hours. The project will be reinspected at the end of this period. If it is found that the deficiencies have not been satisfactorily corrected or other deficiencies are identified by the Quality Assurance Inspector that results in a score of less than 80 on Form No. OOC61, a 'D' rating will be given and all earthwork operations will be shut down until the project receives a 'B' rating.

When a disregard for correcting these deficiencies is evident, an 'F' rating will be given and the entire project will be shut down until the project receives a 'B' rating. When degradation to a resource could occur, or if the Contractor is unresponsive to direction to take corrective action, the Administration may elect to have these corrective actions performed by another contractor or by Administration maintenance staff. All costs associated with this work will be billed to the original Contractor in addition to liquidated damages.

Incentive Payment/Liquidated Damages. The Administration has included an incentive payment to the Contractor. When an average score equal to or greater than 85 for the entire rating quarter is given to the project by the Quality Assurance Inspector the quarterly incentive payment will be made to the Contractor within 60 days after the end of the rating quarter. No incentive will be paid for partial quarters or for quarters with less than four inspections. No incentives will be paid for any quarter that liquidated damages are imposed. A rating quarter consists of three months. The first quarter begins with the month the Notice to Proceed is issued for the project. When a project does not receive a 'D' or 'F' rating and the overall average score given to the project by the Quality Assurance Inspector is equal to or greater than 85 the final incentive payment will be made to the Contractor at final project close-out. If a time extension is granted to the Contract, additional quarterly incentive payments will be drawn from the final incentive payment.

When a 'D' or 'F' rating is given to the project by the Quality Assurance Inspector for any inspections; the Administration will impose liquidated damages on the Contractor. Payment of the liquidated damages shall be made within thirty days from imposition of the liquidated damages and shall not be allowed to accrue for consideration at final project close-out.

When the project receives two 'F' ratings the erosion and sediment control certification issued by the Administration shall be revoked from the project superintendent and the Erosion and Sediment Control Manager for a period of not less than six months and until successful completion of the Administration's Erosion and Sediment Control Certification Program. Neither the project superintendent nor the Erosion and Sediment Control Manager shall be allowed to oversee the installation and maintenance of erosion and sediment controls during the period the certification is revoked on any project of the Administration. The Contractor shall immediately provide certified personnel to replace the project superintendent and the Erosion and Sediment Control Manager. Work may not commence until the certified personnel are in place.

308.01.03 Incentive/Liquidated Damages Payments. The total incentive awarded for this contract will not exceed $ (Payment A). The quarterly incentive payment for this contract is $ (Payment B). A final incentive payment for this contract is $ (1/2 Payment A) less the total quarterly incentives paid during a contract extension.

For each day that the project has a 'D' rating, the Contractor and/or his surety shall be liable for liquidated damages in the amount of $ (Payment D) per day. Failure to upgrade the project to a minimum of a 'B' rating within 72 hours will result in the project being rated 'F'.

For each day that the project has an 'F' rating, the Contractor and/or his surety shall be liable for liquidated damages in the amount of $ (Payment F) per day.

308.03 CONSTRUCTION.

245 **DELETE:** 308.03.01 Contractor Responsibilities its entirety.

INSERT: The following.

308.03.01 Contractor Responsibilities. The Contractor shall demarcate all wetlands, wetland buffers, floodplains, tree protection areas, and the Limit of Disturbance (LOD) as specified in Section 107. Prior to beginning any earth disturbing activity, the Contractor shall have all demarcated wetlands, wetland buffers, floodplains, tree protection areas, and LOD inspected and approved by the Engineer. The Contractor shall construct all erosion and sediment control measures in conformance with 308.01.01. The Contractor shall have all control measures inspected and approved by the Engineer prior to beginning any other earth disturbing activity. The Contractor shall ensure that all runoff from disturbed areas is directed to the sediment control measures. The Contractor shall not remove any erosion or sediment control measure without the approval of the Engineer and MDE. Refer to GP-7.12 for unforeseen conditions.

246 **DELETE:** 308.03.04 Schedule in its entirety.

INSERT: The following.

308.03.04 Schedule. Within 14 days after the Notice of Award, the Contractor shall submit an Erosion and Sediment Control Schedule to implement the E & S Plan to the Administration and the MDE. The schedule shall indicate the sequence of construction, implementation and maintenance of controls, temporary and permanent stabilization, and the various stages of earth disturbance. After the schedule is approved by the Administration, it will be forwarded to MDE for approval. The schedule shall, at least include the following:

(a) Demarcation of all wetlands, wetland buffers, floodplains, tree protection areas, and the LOD prior to any earth disturbing activity.

(b) Clearing and grubbing of areas necessary for installation of perimeter controls specified in the Contract Documents.

(c) Construction of perimeter controls specified in the Contract Documents.

(d) Remaining clearing and grubbing.

(e) Roadway grading (including off-site work).

(f) If applicable, utility installation and whether storm drains shall be used or blocked after construction.

(g) Final grading, landscaping, and stabilization.

(h) Removal of perimeter controls.

No work shall be started on-site or off-site until the Erosion and Sediment Control schedules and methods of operation have been accepted by the Administration and MDE.

308.03.35 Maintenance of Stream Flow.

253 **ADD:** The following after the second paragraph "Upon completion of...to the Engineer."

The Contract Documents may include stream diversion details for maintenance of stream flow. These details show the locations of the stream diversion system and a system that is approved by the Maryland Department of the Environment.

The Contractor is alerted that the stream diversion system as shown may not be capable of blocking the flow of water through the soil beneath the stream diversion system. The Contractor shall be responsible for designing and providing an effective means of diverting the water away from the designated areas, even though it may require more elaborate diversion systems. The Contractor shall also ensure that all excavation performed within the stream diverted area shall be maintained in a dewatered condition, which may require additional pumps, sheeting, shoring, cofferdams, etc. Should the proposed system not perform satisfactorily or additional material and equipment be required to dewater the site and excavated areas, the Contractor shall remedy the stream diversion system at no additional cost to the Administration.

The Contractor shall securely anchor the stream diversion system in place to prevent movement during high water events. Prior to placing the stream diversion system, the Contractor shall submit the proposed method of anchoring to the Engineer and the MDE field inspector for approval. Anchors shall not go beyond the limits of disturbance shown on the Plans or infringe on the channel area available for stream flow. Placing the stream diversion system in the stream without the approval of both the Engineer and the MDE inspector is prohibited. All cost associated with the anchoring of the stream diversion system shall be incidental to the Maintenance of Stream Flow item.

The Contractor shall have the option of proposing an alternate stream diversion system. All conditions stated in the Contract Documents shall apply to the alternate stream diversion system. Any alternate stream diversion system shall be submitted to the Maryland Department of the Environment through the Administration for approval prior to implementation.

308.04 MEASUREMENT AND PAYMENT.

257 **DELETE:** 308.04.26 in its entirety.

INSERT: The following.
308.04.26 Maintenance of Stream Flow will not be measured but will be paid for at the Contract lump sum price. The payment will also include designing and providing diversion structures regardless of the type required to satisfactorily divert the stream flow, excavation, backfill, dewater the site and excavated areas within the stream diversion area, maintenance of the diversion system, sandbags, polyethylene sheeting, diversion pipes, pumps, hoses, connections, and portable sediment tanks. This price will not be adjusted when consideration is given to an alternative stream diversion system regardless of any changes in quantities from that shown in the Contract Documents. The provisions of GP-4.05 will not apply to this work.

308.05 DESIGN CERTIFICATION

Insert: The following:

ENVIRONMENTAL INFORMATION

MDE #

DESIGN CERTIFICATION

"I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, THE 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUMES I & II, AND THE MARYLAND DEPARTMENT OF THE ENVIRONMENT EROSION AND SEDIMENT AND STORMWATER MANAGEMENT REGULATIONS."

NAME	SIGNATURE
MARYLAND REGISTRATION NUMBER P.E., R.L.S. OR R.L.A. (circle)	DATE

CATEGORY 300
DRAINAGE

CONCRETE ENCASEMENT FOR GRATE INLET

DESCRIPTION. This work shall consist of removing existing asphalt or concrete pavement around new or existing inlets and placing concrete encasement as indicated in the Storm Drainage Details. A minimum concrete depth of 10 inches shall be used at the locations shown in the quantity tabulation tables included herein unless otherwise directed by the Engineer in the field. The Contractor shall take care not to damage new or existing inlet structures, curbs, frames, grates and support beams.

The Contractor shall place the steel plates over all inlet repairs not completed at the end of each workday. Steel plates shall be sized in accordance with 505.03.06 or as approved by the Engineer and secured in such a manner as they will not shift during service.

MATERIALS.

Concrete Mix	522.02.01
Reinforcement	908.01
Steel Plates	505.03.06, 522.03.13

CONSTRUCTION. Refer to Section 522 Portland Cement Concrete Pavement Repairs.

MEASUREMENT AND PAYMENT. Concrete Encasement for Grate Inlets will be measured and paid for at the contract unit price per Cubic Yard for the item Mix 6 Concrete for Miscellaneous Structures.

The payment will be full compensation for all excavation, saw cuts, steel plates, concrete, masonry, disposal of waste material, reinforcement, backfill and for all material, labor, equipment, tools, and incidentals necessary to complete the work. If, in the opinion of the Engineer, any part of the new inlet is damaged as a result of the Contractors operation, the structure shall be replaced or repaired to the satisfaction of the Engineer at no additional cost to the Administration.

MONOLITHIC CONCRETE MEDIAN 4'-0" WIDE A-1

Category 5 – Table 1				
Station	**Station**	**Alignment**	**Description**	**LF**
20+07	20+12	MD 187	Repair median	5
22+30	22+40	MD 187	Repair median	10
			Quantity	**15**

CATEGORY 500
PAVING

SECTION 504 — HOT MIX ASPHALT PAVEMENT

504.04 MEASUREMENT AND PAYMENT.

478 **DELETE:** 504.04.01 Price Adjustment for Asphalt Binder in its entirety.

INSERT: The following.

504.04.01 Price Adjustment for Asphalt Binder. A Price Adjustment (PA) will be made to provide additional compensation to the Contractor or a credit to the Administration for the fluctuation in the cost of asphalt binder.

For adjustment purposes, the prevailing base index price will be the price specified for PG 64-22 Asphalt Binder currently posted at www.marylandroads.com (Business with SHA/Contracts, Bid, and Proposals) prior to bid opening. Cost differentials between PG 64-22 and a binder specified shall be included in the price bid per ton for Hot Mix Asphalt. A historical database will be maintained by the Administration

The PA will be made when the index price for the month of placement increases or decreases more than 5 percent of the prevailing base index price. Computations will be as follows:

$$\text{Percent Change} = ((Pp - Pb)/ Pb) \times 100$$

$$PA = T \times Q \times ((Pp - (D \times Pb))$$

Where:

PA = Price Adjustment for the current month
T = Design target asphalt content expressed as a decimal
Q = Quantity of Hot Mix Asphalt placed for the current month
Pp = Index price for PG 64-22 Asphalt Binder per ton for the month of placement
D = 1.05 for increases over 5 percent; 0.95 for decreases over 5 percent
Pb = Prevailing base index price for PG 64-22 Asphalt Binder per ton

PA resulting in increased payment to the contractor will be paid under the item Price Adjustment for Asphalt Binder. The item amount will be established by the Administration and shall not be revised by the Contractor. PA resulting in a decreased payment will be deducted from monies owed the Contractor.

CATEGORY 500
PAVING

SECTION 504 — HOT MIX ASPHALT PAVEMENT

504.04 MEASUREMENT AND PAYMENT.

479 **DELETE**: 504.04.02 Payment Adjustments for Pavement Density and Hot Mix Asphalt Mixture in its entirety.

INSERT: The following.

504.04.02 Payment Adjustments for Pavement Density and Hot Mix Asphalt Mixture. Payment adjustments for pavement density will be based on individual sublot core test data for a given lot and the lot average density as specified in this section and Table 504A. Payment reductions for density and for mixture will be made by adjusting the payment for Hot Mix Asphalt. Incentive payments will be made using the Contract items for HMA Density Incentive and HMA Mix Design Incentive. The item amounts will be established by the Administration and shall not be revised by the Contractor. Payment reductions for density will be waived for portions of the pavement where the Engineer determines that inadequate density is due to a poor foundation.

TABLE 504A		
Dense Graded HMA Mixes – Percent of Maximum Density		
Lot Average % Minimum	No Individual Sublot Below %*	Pay Factor
94.0	94.0	1.050
93.8	93.7	1.045
93.6	93.4	1.040
93.4	93.1	1.035
93.2	92.8	1.030
93.0	92.5	1.025
92.8	92.2	1.020
92.6	91.9	1.015
92.4	91.6	1.010
92.2	91.3	1.005
92.0	91.0	1.000
91.8	90.8	0.990
91.6	90.6	0.980
91.4	90.4	0.970
91.2	90.2	0.960
91.0	90.0	0.950
90.8	89.8	0.940
90.6	89.6	0.930
90.4	89.4	0.920
90.2	89.2	0.910
90.0	89.0	0.900
89.8	88.8	0.890
89.6	88.6	0.880
89.4	88.4	0.870
89.2	88.2	0.860
89.0	88.0	0.850
88.8	87.8	0.840
88.6	87.6	0.830
88.4	87.4	0.820
88.2	87.2	0.810
88.0	87.0	0.800
Less than 88.0	87.0	0.750 or rejected by Engineer

Note 1: When any test data is above 97.0, the lot may be rejected per the Engineer. When not rejected, the lot will receive a pay adjustment in accordance with the following:

(a) When the density lot average is above 97.5, the pay factor = 0.750
(b) When 3 sublot densities are above 97.0, the pay factor = 0.950
(c) When 4 or more sublot densities are above 97.5, the pay factor = 0.750

Note 2: Pay incentive or pay disincentive will not be paid for placements identified as wedge/level courses or thin lift courses.

*Note 3: When the Contractor's core specific gravity data does not compare with the Administration's core specific gravity data, only the Administration's single sublot values and lot average value will be used in acceptance decision.

*Note 4: The average sublot values and the lot average will be used in acceptance decision.

Acceptance of a mixture lot will be in conformance with Sections 904, 915, and MSMT 735. A composite pay factor (CPF) for asphalt content and gradation will be based on the total estimated percent of the lot that is within Specification limits as computed using the quality level analysis in conformance with MSMT 735.

Payment adjustments will be computed as follows:

Density Lot Payment Adjustment = (DF – 1) x (CP) x (TL)

Mix Design Lot Payment Adjustment = (MF – 1) x (CP) x (TL)

where:

DF = Density pay factor from Table 504A
MF = Mixture pay factor [0.55 + (0.5 x CMPWSL)]
Refer to MSMT 735 for CMPWSL.
CP = Contract unit price
TL = Applicable tonnage per lot

An in-place density lot containing material with a pay factor of less than 1.000 may be accepted at the reduced pay factor, provided the pay factor for density is at least 0.800 and there are no isolated defects.

A mixture lot containing material with a pay factor of less than 1.000 may be accepted at the reduced pay factor, provided the composite pay factor for asphalt content and grading is at least 0.750 and there are no isolated defects.

An in-place density lot containing nonconforming material that fails to obtain at least a 0.800 pay factor and a mixture lot containing nonconforming material that fails to obtain at least a 0.750 pay factor for asphalt content and gradation will be evaluated to determine acceptance. Any lot that is rejected shall be replaced.

When less than five Quality Control or Quality Assurance samples per in-place density lot have been obtained, the lot will not be evaluated for incentive payment.

When less than three mix samples have been obtained at the time of the acceptance sampling or at the time a lot is terminated, the Engineer will determine if the material in a shortened lot will be considered a part of the previous lot or whether it will be accepted based on the individual test data.

CATEGORY 500
PAVING

SECTION 535 — PAVEMENT SURFACE PROFILE

535.01 DESCRIPTION. This work shall consist of measuring the roughness of the final surface of Hot Mix Asphalt (HMA) or Portland Cement Concrete (PCC) pavements. The Contractor shall use an International Roughness Index (IRI) Inertial Profiler to collect Quality Control (QC) data. The IRI Inertial Profiler shall conform to E 950 and MSMT 563. The Administration will use an IRI Inertial Profiler to perform all Quality Assurance (QA) testing and acceptance. All traveled roadway surfaces shall be measured unless otherwise indicated in this Specification.

535.01.01 Existing Conditions. The following are the IRI values measured for this project:

IRI INDICATOR	REPORTED VALUES FOR BOTH WHEEL PATHS (in./mile)	REPORTED STATEWIDE PRINCIPLE ARTERIAL VALUES (2007) (in./mile)
Average	187	108
Maximum	418	639
Minimum	84	29
Standard Deviation	90	68

NOTE 1: IRI is an abbreviation for the International Roughness Index developed under World Bank Technical Report No. 46.
NOTE 2: IRI values were generated from pavement longitudinal profile measured in the outside travel lane in both directions of traffic.
NOTE 3: The average, maximum, minimum, and standard deviation IRI values are based on intervals of 1/10 of a mile in length.
NOTE 4: A definition of ride quality based on IRI, as defined by The Federal Highway Administration is given below:

IRI RANGE (in./mile)	RIDE QUALITY
< 60	Very Good
≥ 60 to < 95	Good
≥ 95 to ≤ 170	Fair
>170 to ≤ 220	Mediocre
> 220 to ≤ 640	Poor

535.02 MATERIALS. Not applicable.

535.03 CONSTRUCTION.

535.03.01 Equipment Standardization Testing. Standardization testing shall be completed on Administration specified sites at regular intervals in conformance with MSMT 563. Additional standardization testing may be required for a device that is potentially out of conformance between regular standardization tests. Standardization shall be completed and a copy of the results shall be on file at the Administration's Office of Materials Technology (OMT). QC test data obtained with a profiler that has not completed standardization testing in conformance with MSMT 563 will not be accepted.

535.03.02 Quality Control Testing for Pavement Profile. The finished surface of all pavements shall be measured with a profiler by the Contractor in conformance with MSMT 563 and E 950. Pavement profiles shall be measured in both wheel paths simultaneously, parallel to the right edge of the lane, and in the direction of travel for each lane. The Contractor shall establish and document in the HMA Field Quality Control Plan (504.03) or the PCC Proposed Paving Plan (520.03) a regular schedule of pavement profiling to verify conformance with these Specifications. The Contractor shall notify the Engineer prior to performing any QC testing. The Contractor's QC data shall be submitted to the Engineer, in accordance with the approved QC plan submitted to OMT, within 72 hours of completion of the paving operations.

Data Submittal. All submittals shall be sent to the Engineer and to the Administration's OMT (in electronic format) via one of the following:

(a) E-mail: ridespec@sha.state.md.us

(b) Delivered: Office of Materials Technology
7450 Traffic Drive
Hanover, MD 21076
Attention: Paving Quality Assurance Team Leader

When any profile testing and data submission has not been completed within the specified times and in conformance with MSMT 563 for all sections on the project, the tested pavement will not be eligible for incentive payment as stated in 535.04.03(a). The Contractor's QC data will still be required for material clearance per Frequency Guide.

The QC IRI shall be determined using the Contractor's Inertial Profiler and shall be reported in sections equal to 25 ft in length and one lane in width. Tested sections shorter than 25 ft due to exempt areas or the project end shall be ignored. A full 25 ft section shall be started after each exempt area. Three runs shall be made as described in MSMT 563. The coefficient of variation of the overall average IRIs shall be less than or equal to 4 percent for three runs for the data to be accepted. When the first three runs do not meet the above criteria, additional runs shall be performed until three measured runs meet the criteria. All three runs shall be submitted to the Administration; however, only the median run (based on average IRI) will be considered from Contractor's QC data, and will be used to compute any pay adjustments.

(a) Areas Not Profiled. The following pavement areas shall not be profiled and not reported for pay adjustment:

(1) Shoulder areas.

(2) Parking areas of ride sharing facilities or park and ride lots.

(3) Pavements of ramps, side street tie-ins, acceleration lanes, or deceleration lanes less than 1000 ft in length.

(4) Bridge decks or railroad crossings and pavement within 50 ft thereof.

(5) Pavement within 50 ft of transverse joints that separate it from existing pavement. This does not apply when a transverse joint is paved on both sides as part of one contract.

(6) Pavements on projects with less than 1000 center lane feet (after elimination of areas not to be profiled under items 1, 2, 3, 4, and 5 above.)

Pavement Surface Checks shall be performed on areas listed above in conformance with Section 504.03.12.

(b) Defects. When any section IRI is greater than IRI_e (table in 535.04), the Contractor shall take one of the following corrective actions, as directed and approved by the Engineer, at no additional cost to the Administration:

(1) Remove and replace the pavement that exceeds IRI_e, or

(2) Grind the section to bring the section IRI into conformance with these Specifications, or

(3) Accept the Defect Cost (P_{defect}, in 535.04) for any defect section where corrective action is not performed.

Items 1, 2, or 3 above shall be applied to each defect section as directed by the Engineer. Any approval from the Engineer to waive items 1 or 2 shall not constitute a waiver of item 3 unless explicitly stated by the Engineer. The Contractor shall reprofile all affected pavement sections, including any additional transverse paving joints created, after any corrective work to determine if the sections are within Specification. The reprofiled data shall include the section prior to the corrected sections and the four sections after the corrected sections. The reprofiled data shall be used for final pay calculations; however, the minimum IRI value for any corrected section shall be limited to IRI_c (table in 535.04).

Defects not due to Contractor's Workmanship. When the Engineer determines that a defect is not the result of the Contractor's workmanship, the Engineer shall provide a written justification for removing the defect from final pay calculations to the Administration's OMT (Attention: Asphalt Technology Division). The Asphalt Technology Division will

provide a concurrence/non-concurrence decision to the Engineer. In the case of concurrence, the defects found not due to the Contractor's workmanship shall not be included in final pay calculations. In the case of non-concurrence, the Engineer will discuss this matter with the Administration's OMT's Asphalt Technology Division before making the final determination of pay adjustment.

535.03.03 Paving Quality Assurance Testing for Pavement Profile (IRI). The Administration may test sections of the pavement to verify the Contractor's QC data. When the QA testing has not been performed within 14 calendar days from the date that the final, 100 percent QC data submittal is received by the Administration's OMT, only the QC data will be used for any pay adjustments on the project. The QA testing will follow the same procedures required in 535.03. The initial QA test will consist of one run on all 25 ft sections. The initial QA run and the median QC run will be compared to determine acceptance of QC data. The average IRI, the number of defects, and the number of tested sections will be compared as follows:

STATISTIC	UNIT	QC DATA TOLERANCE WITH RESPECT TO QA DATA
Average IRI	in./mile	± (2 % + 2)
Number of Defects	Sections	± (10 % + 2)
Number of Tested Sections	Sections	± (1 % + 1)

When the Contractor's QC data falls within the above tolerances, the Contractor's QC data will be used for all pay adjustments. When the Contractor's QC data does not agree with the initial QA data as described above, and a cause cannot be identified, the Administration will profile a minimum of two additional QA runs. The three QA runs (one initial and two retests) will then be evaluated to determine if the coefficient of variation of the overall average IRIs is less than or equal to 4 percent for all three runs. When the three QA runs do not meet the above criteria, additional runs will be performed until three measured QA runs meet the criteria. The median run (based on average IRI) of the three QA runs will then be recompared with the Contractor's QC data in conformance with the above table.

When the QC and QA data are still not within the tolerances as described above for Average IRI or Number of Defects after three QA runs, both profilers shall be retested on a standardization test site to determine if either profiler no longer conforms to MSMT 563. When either profiler is out of standardization, the equipment shall be recalibrated or repaired as necessary to bring the device back into compliance with MSMT 563. When the Contractor's profiler is not restandardized and brought into compliance with MSMT 563 within three paving days, the Contractor shall cease the paving operation or use another standardized profiler for QC data collection. Once the Contractor's profiler complies with MSMT 563, the Contractor may retest sections for comparison with the Administration's data or accept the Administration's QA data as the basis for any pay adjustment on all sections. When the Administration's profiler is out of standardization, the Contractor's QC data for all sections will be accepted. When both profilers are found to be in noncompliance with MSMT 563, the profilers shall be repaired or recalibrated as necessary and all QC and QA testing since the previous QC/QA comparison shall be repeated.

When the QC and QA data for Number of Tested Sections are not within the tolerance as described above, the Contractor and the Administration shall recalibrate their respective Distance Measuring Instruments (DMIs), and perform additional QC testing until the QC data meets the tolerance criteria for Number of Tested Sections.

535.04 MEASUREMENT AND PAYMENT. Pavement surface profile testing costs will be incidental to the HMA surface material or PCC material as specified in the Contract Documents. Payment will be full compensation for all set up, technicians, traffic control, any type of corrective work to bring the pavement into conformance with this Specification, and for all material, labor, equipment, tools, and incidentals necessary to complete the work. The pay adjustment numbers for the Overall IRI (535.04.01) and for Defects (535.04.02) shall be calculated first. The pay adjustment for pavement surface profile applied on the Contract shall be the Total Pay Adjustment in conformance with 535.04.03.

535.04.01 Overall IRI. The overall average IRI for the project (IRI_{AVG}) will be calculated as the average IRI value of all tested 25 ft sections on the project. The pay adjustment for Overall IRI will then be calculated based on the factors shown below. This pay adjustment applies only to the pavement within the tested sections.

Incentive. $PF = P_{max}$, when IRI_{AVG} is less then or equal to IRI_a
$PF = P_{max} \times (IRI_b - IRI_{AVG})/(IRI_b - IRI_a)$, when IRI_{AVG} is greater than IRI_a and less than IRI_b

INCENTIVE = PF x NS x (25/5280 lane miles per section)
DISINCENTIVE = 0

Full Pay. When IRI_{AVG} is greater than or equal to IRI_b and less than or equal to IRI_c

INCENTIVE = 0
DISINCENTIVE = 0

Disincentive. $PF = P_{min} \times (IRI_{AVG} - IRI_c)/(IRI_d - IRI_c)$, when IRI_{AVG} is greater than IRI_c and less than IRI_d,
$PF = P_{min}$, when IRI_{AVG} is greater than or equal to IRI_d

INCENTIVE = 0
DISINCENTIVE = PF x NS x (25/5280 lane miles per section)

535.04.02 Defects. The IRI for each individual section on the project will be used to calculate any cost to be applied for defects on the project. The pay adjustment for defects will be calculated based on the factors shown below. This pay adjustment applies only to the pavement within the tested sections.

NS_{defect} = Number of sections with an IRI greater than or equal to IRI_e
DEFECT COST = $P_{defect} \times NS_{defect}$

Where:

	DESCRIPTION	VALUE	UNITS
P_{max}	Maximum Incentive for Overall IRI	6,500	Dollars per lane-mile
P_{min}	Maximum Disincentive for Overall IRI	6,500	Dollars per lane-mile
P_{defect}	Defect Cost	310	Dollars per section
PF	Pay Factor for Overall IRI	*	Dollars per lane-mile
INCENTIVE	Incentive for Overall IRI	*	Dollars
DISINCENTIVE	Disincentive for Overall IRI	*	Dollars
DEFECT COST	Cost for Defects	*	Dollars
IRI_a	IRI for Maximum Incentive	40	Inches per mile
IRI_b	Minimum IRI for Full Pay	60	Inches per mile
IRI_c	Maximum IRI for Full Pay	80	Inches per mile
IRI_d	IRI for Maximum Disincentive	100	Inches per mile
IRI_e	IRI threshold for Defects	130	Inches per mile
IRI_{AVG}	Overall average IRI for the project	*	Inches per mile
NS	Number of tested 25 foot Sections	*	Sections
NS_{defect}	Number of 25 foot Defect Sections	*	Sections

* Value to be determined on the project.

535.04.03 Total Pay Adjustment. The Total Pay Adjustment for pavement surface profile on the Contract will be the total of any incentive or disincentive for Overall IRI minus any cost for Defects and shall be subject to conditions (a) and (b) below.

Total Pay Adjustment = INCENTIVE - DISINCENTIVE - DEFECT COST

(a) Regardless of the measured profile of any test section, incentive payment will not be permitted for the project when the Contractor's QC data was not submitted on time in conformance with 535.03.02. All other sections of this Specification shall still apply.

Total Pay Adjustment = 0 - DISINCENTIVE - DEFECT COST

(b) The total value of Overall IRI disincentive and Defect Cost shall not be more than the Maximum Disincentive pay adjustment for all of the profiled 25 foot sections.

If DISINCENTIVE + DEFECT COST is greater than P_{min} x NS x (25/5280 lane miles per section)
then Total Pay Adjustment = - P_{min} x NS x (25/5280 lane miles per section)

CATEGORY 500
PAVING

SECTION 553 — LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS

553.01 DESCRIPTION. Prepare and apply lead free reflective thermoplastic pavement markings to roadway surfaces as specified in the Contract Documents or as directed by the Engineer.

553.02 MATERIALS.

Lead Free Reflective Thermoplastic Pavement Markings	951.02

553.03 CONSTRUCTION.

553.03.01 Quality Assurance/Quality Control. Refer to 549.03.01.

553.03.02 Application Equipment. An oil or air jacketed kettle shall be utilized for uniform melting and heating of the thermoplastic material. The kettle shall provide continuous mixing and agitation of the material. The kettle and the applicator shall be equipped with an automatic thermostatic device to provide positive temperature control.

The equipment shall be constructed so that all mixing and conveying parts, up to and including the application apparatus, maintains the material at the specified temperature. Conveying parts of the applicator between the reservoir and the application apparatus shall be constructed to prevent clogging and accumulation. The applicator shall be capable of containing a minimum of 600 lb of molten thermoplastic material.

The kettle and applicator shall be constructed and arranged to conform to the requirements of the National Board of Fire Underwriters (NBFU), the National Fire Protection Association (NFPA), and State and local authorities.

Temperature gauges shall be calibrated every six months and a copy of the calibration certification shall be submitted to the Engineer.

The applicator shall apply the surface dressing beads to the molten thermoplastic marking by means of a pressurized bead dispenser or other mechanical conveying method not dependent upon gravity for uniform application. The bead dispenser shall be equipped with an automatic cutoff system that will stop the flow of the thermoplastic material whenever there is a disruption in the application of the beads so that all markings placed shall be covered with a uniform layer of surface dressing beads.

Application equipment shall be capable of applying the markings at multiple width settings ranging from 4 to 12 in. as specified in the Contract Documents.

The applicator shall provide a method for cleanly cutting off stripe ends and shall be capable of applying all longitudinal pavement markings.

The equipment shall be mobile and maneuverable to the extent that straight lines can be followed and all standard curves can be made in true arcs.

All parts of the equipment shall be thoroughly cleaned of foreign material or different colored material prior to the introduction of a new batch of thermoplastic material.

553.03.03 Cleaning Pavement Surfaces. Refer to 549.03.02.

553.03.04 Application. The ambient and surface temperatures shall be at least 50 F and rising at the time of application.

Thermoplastic pavement markings shall be sprayed onto the pavement surface. Only the spray method of application shall be permitted. Gore areas, crosswalks, small intersections, roundabouts, and other areas which preclude the application of the markings with truck mounted equipment will be exempt from the spray application requirement.

Thermoplastic pavement markings shall conform to the following:

(a) Temperature. The molten material temperature shall be between 400 and 440 F unless otherwise recommended by the manufacturer, and approved by the Engineer.

(b) Primer. A primer shall be used if thermoplastic is applied to portland cement concrete. Any primer used shall be compatible with the thermoplastic material.

(c) Thickness. The pavement markings shall yield a solid thickness range of 80 to 95 mils above the roadway surface across the middle two-thirds of the line width when tested as specified in MSMT 729. Variation from this range will be used for the price adjustment specified in 553.04.01.

(d) Glass Beads. Glass beads shall be uniformly applied to the surface of the molten thermoplastic at the minimum rate of 7 to 9 lb/100 ft^2, as specified in MSMT 729.

(e) Color. The color of the dry markings shall match Federal Standard 595 (13538 - yellow or 17886 - white). The Contractor shall supply the specified color chips for the Engineer's use to visually determine that the thermoplastic material matches the specified color.

(f) Retroreflectance. Refer to 549.03.03(h). The millicandellas/lux/square meter values taken anytime within the first 30 days shall conform to the following:

RETROREFLECTANCE

COLOR	RETROREFLECTIVITY	CORRECTIVE ACTION
White	equal to or greater than 250	None
Yellow	equal to or greater than 150	
White	less than 250	Necessary corrective actions, including grinding if necessary, and re-tracing
Yellow	less than 150	

(g) Width. Refer to 549.03.03(e).

(h) Alignment. Refer to 549.03.03(f).

(i) Layout Markings. Refer to 549.03.03(i).

553.03.05 Quality Control Test Strip. Refer to 549.03.04.

553.03.06 Responsibility. Refer to Section 549.

553.03.07 Observation Period. Refer to Section 549.

553.04 MEASUREMENT AND PAYMENT. Refer to 549.04. The reflectometer will become the property of the Contractor at the completion of the project.

553.04.01 Price Adjustment for Film Thickness. The unit price for Lead Free Reflective Thermoplastic Pavement Markings will be per striped linear foot based on MSMT 729 calculations for thickness, and will be adjusted in conformance with the following:

MIL THICKNESS	PERCENT OF PAYMENT - UNIT PRICE
80 – 95 (a)(b)	100
75 – 79	90
70 – 74	88
65 – 69	82
60 – 64	72
Less than 60	Retrace to achieve a thickness of 80 to 95 mils. Retrace thickness shall be 30 mils min (b).

(a) The Engineer may require the Contractor to remove excess material thickness.
(b) Removal of excess material and retracing pavement markings shall be performed at no additional cost to the Administration.

CATEGORY 500 PAVING

SECTION 556 — PREFORMED THERMOPLASTIC PAVEMENT MARKINGS

556.01 DESCRIPTION. Furnish and install heat applied preformed thermoplastic pavement marking symbols, legends, and lines as specified in the Contract Documents or as directed by the Engineer.

556.02 MATERIALS.

Preformed Thermoplastic is a durable pavement marking material. All Preformed Thermoplastic Pavement Marking material shall be selected from the Qualified Products List.

Heat Applied Permanent Preformed Thermoplastic Pavement Marking Material	951.06

556.03 CONSTRUCTION.

556.03.01 Quality Assurance/Quality Control. Refer to 549.

556.03.02 Application. The location, width, and type of marking, shall be as specified in the Contract Documents or as directed by the Engineer.

Applying pavement markings over longitudinal joints is prohibited; they shall preferably be offset 2 in. from them.

Thermoplastic Pavement Marking shall conform to the following:

(a) Temperature. The markings shall be applied when the thermoplastic, ambient, and surface temperature, and relative humidity conform to the manufacturer's recommendations.

(b) Color. The color of the dry markings shall match Federal Standard 595 (13538 - yellow or 17886 - white). The Contractor shall supply the specified color chips for the Engineer's use to visually determine that the thermoplastic material matches the specified color.

(c) Primer. When specified by the manufacturer, a primer shall be used if thermoplastic is applied to Portland cement concrete.

(d) Retroreflectance. The minimum retroreflectance shall be 150 millicandelas/lux/square meter for yellow and 250 millicandelas/lux/square meter for white as determined in conformance with 549.03.

556.03.05 Packaging. The material shall be handled for shipping, unloading and storage as recommended by the manufacturer. Each shipping package shall be marked with the following information:

(a) Manufacturer's name.

(b) Description of item.

(c) Date of manufacture.

(d) Contractor's name.

(e) Purchase order number.

(f) Lot number.

(g) Color.

556.04 MEASUREMENT AND PAYMENT. The payment will be full compensation for all pavement preparation, furnishing and placing of markings, testing, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

Preformed Thermoplastic Pavement Marking Legends (letters and numbers) and Symbols will be measured and paid for at the Contract unit price per square foot. The square foot pay quantity for Legends (letters and numbers) and Symbols will be as specified in the Administrations Standard Details

Preformed Thermoplastic Pavement Marking lines will be measured and paid for at the Contract unit price per linear foot for the color and width specified.

STANDARD TYPE A COMBINATION CURB AND GUTTER
12 INCH GUTTER PAN 8 INCH DEPTH
MODIFIED MIX 6 CONCRETE FOR MISCELLANEOUS STRUCTURES

Station	Station	Offset	Location/Description	L.F.
2+30	2+50	Right	Replace curb & gutter at ramp	20
2+92	3+10	Right	Replace curb & gutter at ramp	20
4+08	4+28	Right	Replace curb & gutter at ramp	20
4+70	4+90	Right	Replace curb & gutter at ramp	20
5+80	5+95	Left	Replace curb & gutter at inlet	15
5+81	5+96	Right	Replace curb & gutter at inlet	15
5+96	6+14	Right	Replace curb & gutter at ramp	30
6+10	6+17	Left	Replace curb & gutter at ramp	12
6+48	6+61	Right	Replace curb & gutter at ramp	22
6+48	6+61	Left	Replace curb & gutter at ramp	22
7+70	7+85	Left	Replace curb & gutter at inlet	15
7+70	7+85	Right	Replace curb & gutter at inlet	15
9+78	10+02	Left	Replace curb & gutter at inlet	23
9+80	10+00	Right	Replace curb & gutter at inlet	20
10+00	10+56	Right	Replace curb & gutter at ramp	65
10+02	10+38	Left	Replace curb & gutter at ramp	45
11+00	11+32	Right	Replace curb & gutter at inlet/ramp	35
11+24	11+29	Left	Replace curb & gutter at ramp	18
11+63	11+78	Left	Replace curb & gutter at inlet	15
11+63	11+78	Right	Replace curb & gutter at inlet	15
13+40	13+55	Right	Replace curb & gutter at inlet	15
13+65	13+80	Left	Replace curb & gutter at inlet	15
18+88	19+03	Right	Replace curb & gutter at inlet	15
18+99	19+14	Left	Replace curb & gutter at inlet	15
19+29	19+42	Left	Replace curb & gutter at ramp	20
19+36	19+46	Right	Replace curb & gutter at ramp	20
19+76	19+86	Left	Replace curb & gutter at ramp	20
19+80	19+90	Right	Replace curb & gutter at ramp	20
21+60	21+75	Right	Replace curb & gutter at inlet	15
			Subtotal This Sheet	617

STANDARD TYPE A COMBINATION CURB AND GUTTER
12 INCH GUTTER PAN 8 INCH DEPTH

MODIFIED MIX 6 CONCRETE FOR MISCELLANEOUS STRUCTURES				
Station	**Station**	**Offset**	**Location/Description**	**L.F.**
21+75	21+92	Right	Replace curb & gutter at ramp	22
21+98	22+13	Left	Replace curb & gutter at inlet	15
22+24	22+33	Left	Replace curb & gutter at ramp	20
22+32	22+45	Right	Replace curb & gutter at ramp	16
22+60	22+75	Right	Replace curb & gutter at inlet	15
22+86	23+01	Left	Replace curb & gutter at inlet	15
24+53	24+84	Left	Replace curb & gutter at ramp	42
24+54	24+82	Right	Replace curb & gutter at ramp	35
25+14	25+52	Right	Replace curb & gutter at inlet/ramp	42
25+20	25+56	Left	Replace curb & gutter at inlet/ramp	46
30+36	30+73	Right	Replace curb & gutter at ramp	50
30+50	30+75	Left	Replace curb & gutter at ramp	42
31+12	31+25	Left	Replace curb & gutter at ramp	30
31+44	31+56	Right	Replace curb & gutter at ramp	13
34+27	34+42	Right	Replace curb & gutter at inlet	15
34+39	34+54	Left	Replace curb & gutter at inlet	15
37+25	37+40	Right	Replace curb & gutter at inlet	15
37+57	37+72	Left	Replace curb & gutter at inlet	15
39+16	39+31	Left	Replace curb & gutter at inlet	15
39+21	39+36	Right	Replace curb & gutter at inlet	15
39+80	39+95	Right	Replace curb & gutter at inlet	15
40+22	40+37	Left	Replace curb & gutter at inlet	15
43+55	43+70	Left	Replace curb & gutter at ramp	16
44+10	44+22	Left	Replace curb & gutter at ramp	16
44+22	44+37	Left	Replace curb & gutter at inlet	15
44+45	44+60	Left	Replace curb & gutter at inlet	15
			Proposed Quantity	**1,250**

5 INCH CONCRETE SIDEWALK

Station	Station	Offset	Location/Description	S.F.
2+30	2+50	Right	New sidewalk ramp	80
2+92	3+10	Right	New sidewalk ramp	75
4+08	4+28	Right	New sidewalk ramp	85
4+70	4+90	Right	New sidewalk ramp	85
5+81	5+96	Right	New sidewalk at inlet	77
5+96	6+14	Right	New sidewalk ramp	140
6+10	6+17	Left	New sidewalk ramp	50
6+48	6+61	Right	New sidewalk ramp	160
6+48	6+61	Left	New sidewalk ramp	100
7+70	7+85	Left	New sidewalk at inlet	75
7+70	7+85	Right	New sidewalk at inlet	75
9+78	10+02	Left	New sidewalk at inlet	100
9+80	10+00	Right	New sidewalk at inlet	100
10+00	10+56	Right	New sidewalk ramp	350
10+02	10+38	Left	New sidewalk ramp	200
11+00	11+32	Right	New sidewalk at inlet/ramp	130
11+24	11+29	Left	New sidewalk ramp	150
11+63	11+78	Right	New sidewalk at inlet	15
13+40	13+55	Right	New sidewalk at inlet	75
13+65	13+80	Left	New sidewalk at inlet	75
18+88	19+03	Right	New sidewalk at inlet	75
18+99	19+14	Left	New sidewalk at inlet	75
19+29	19+42	Left	New sidewalk ramp	80
19+36	19+46	Right	New sidewalk ramp	85
19+76	19+86	Left	New sidewalk ramp	90
19+80	19+90	Right	New sidewalk ramp	80
21+60	21+75	Right	New sidewalk at inlet	75
			Subtotal This Sheet	2,757

5 INCH CONCRETE SIDEWALK				
Station	**Station**	**Offset**	**Location/Description**	**S.F.**
21+75	21+92	Right	New sidewalk ramp	80
21+98	22+13	Right	New sidewalk at inlet	75
22+24	22+33	Left	New sidewalk ramp	85
22+32	22+45	Right	New sidewalk ramp	140
22+60	22+75	Right	New sidewalk at inlet	75
22+86	23+01	Left	New sidewalk at inlet	75
24+53	24+84	Left	New sidewalk ramp	90
24+54	24+82	Right	New sidewalk ramp	205
25+14	25+52	Right	New sidewalk at inlet/ramp	200
25+20	25+56	Left	New sidewalk at inlet/ramp	280
30+36	30+73	Right	New sidewalk ramp	225
30+50	30+75	Left	New sidewalk ramp	300
31+12	31+25	Left	New sidewalk ramp	170
31+44	31+56	Right	New sidewalk ramp	140
34+27	34+42	Right	New sidewalk at inlet	75
34+39	34+54	Left	New sidewalk at inlet	75
37+25	37+40	Right	New sidewalk at inlet	75
37+57	37+72	Left	New sidewalk at inlet	75
39+16	39+31	Left	New sidewalk at inlet	75
39+21	39+36	Right	New sidewalk at inlet	75
39+80	39+95	Right	New sidewalk at inlet	75
40+22	40+37	Left	New sidewalk at inlet	75
43+55	43+70	Left	New sidewalk ramp	80
44+10	44+22	Left	New sidewalk ramp	80
44+22	44+37	Left	New sidewalk at inlet	75
44+45	44+60	Left	New sidewalk at inlet	75
			Proposed Quantity	**5,810**

DETECTABLE WARNING SURFACE FOR CURB RAMPS

Category 6 Station	Station	Alignment	Offset	Location/Description	S.F.
2+40	---	MD 187	Right	Sidewalk ramp	12
3+00	---	MD 187	Right	Sidewalk ramp	12
4+15	---	MD 187	Right	Sidewalk ramp	12
4+75	---	MD 187	Right	Sidewalk ramp	12
6+12	---	MD 187	Left & Right	Sidewalk ramp	26
6+50	---	MD 187	Left & Right	Sidewalk ramp	28
10+12	---	MD 187	Left & Right	Sidewalk ramp	20
10+30	---	MD 187	Left	Sidewalk ramp	12
10+47	---	MD 187	Right	Sidewalk ramp	12
11+07	---	MD 187	Right	Sidewalk ramp	18
11+28	---	MD 187	Left	Sidewalk ramp	10
19+36	---	MD 187	Left	Sidewalk ramp	12
19+40	---	MD 187	Right	Sidewalk ramp	12
19+82	---	MD 187	Left & Right	Sidewalk ramp	24
21+85	---	MD 187	Right	Sidewalk ramp	12
22+25	---	MD 187	Left	Sidewalk ramp	12
22+35	---	MD 187	Right	Sidewalk ramp	12
22+75	---	MD 187	Left	Sidewalk ramp	12
24+65	---	MD 187	Left & Right	Sidewalk ramp	20
24+78	---	MD 187	Left & Right	Sidewalk ramp	20
25+27	---	MD 187	Left & Right	Sidewalk ramp	24
30+50	---	MD 187	Right	Sidewalk ramp	12
30+60	---	MD 187	Left & Right	Sidewalk ramp	20
30+77	---	MD 187	Left	Sidewalk ramp	13
31+18	---	MD 187	Left	Sidewalk ramp	10
31+43	---	MD 187	Right	Sidewalk ramp	10
34+72	---	MD 187	Left	Sidewalk ramp	12
35+10	---	MD 187	Left	Sidewalk ramp	12
43+63	---	MD 187	Left	Sidewalk ramp	13
44+15	---	MD 187	Left	Sidewalk ramp	12
				Proposed Quantity	**460**

CATEGORY 800
TRAFFIC

AUDIBLE/TACTILE PEDESTRIAN PUSHBUTTON STATION AND SIGNS

DESCRIPTION. This work shall consist of furnishing and installing self-contained Audible/Tactile Pedestrian Pushbutton Station and Signs, as specified in the Contract Documents or as directed by the Engineer.

MATERIALS. Audible/Tactile Pedestrian Pushbutton Station and Signs and all component parts shall meet the latest edition of the National Electrical Manufacturers Association (NEMA) Standards and Underwriters Laboratory (UL), as applicable

Serial numbers and model numbers, if available, shall be permanently engraved on all removable components and hardware. The serial number and model number shall be etched, stamped, molded, or attached using metallic self-adhesive labels. The use of adhesive backed paper labels is not acceptable.

CONSTRUCTION. Audible/Tactile Pedestrian Pushbutton Station and Signs shall be designed to mount near or at the bottom of the pedestrian display mounting post. The pushbutton assembly for the audible signal may replace or supplement an existing pedestrian signal pushbutton.

Audible/Tactile Pedestrian Pushbutton Station and Signs shall be designed as follow:

(1) A single base unit at the traffic control cabinet shall control 2 to 12 (maximum of 3 per phase) push button stations.

(2) Only 2 wires shall be required from traffic controller cabinet per each phase.

(3) Each station shall have a 2-in. button with a tactile raised directional arrow on the button.

(a) It shall be possible to change the arrow direction to one of four directions.

(b) Arrow/button shall vibrate during the walk period following a push of the button.

(4) The push button station frame shall be cast aluminum with mounting holes for a 5 in. by 7.75 in. or larger pedestrian sign.

Audible/Tactile Pedestrian Pushbutton Station and Signs shall have the following features.

(1) Locating tone

(2) 5 walk sound choices that shall be field selectable.

(3) 3 pedestrian clearance sound choices that shall be field selectable.

(4) A Direction of Travel message shall be standard with extended push.

(5) An Information message shall be optional with extended push.

The audible sounds emitted by the Audible/Tactile Pedestrian Pushbutton Station and Signs shall have the following properties

(1) All audible sounds shall emanate from the push button station.

(2) All audible sounds for all push button stations shall be synchronized.

(3) Each audible feature shall have independently-adjustable minimum and maximum volume limits.

(4) All sounds shall automatically adjust over a 60 dB range to compensate for ambient noise levels.

(5) . All volumes and optional features shall be settable using a handheld infrared device with password security. The infrared device shall be capable of updating/setting all push button stations, or the intersection from a single pushbutton station (Global updating).

(6) The ability to mute sounds at all crosswalks except activated crosswalks.

The system shall have user-selectable multiple language capability.

The system shall be able to play an emergency preemption message.

The system shall be able to self-test its buttons and to report any faults to the traffic controller.

Warranty. Audible/Tactile Pushbutton Station and Signs shall be warranted by the Manufacturer for a period of 24 months from the date of delivery.

Compatibility Testing: Audible/Tactile Pushbutton Station and Signs manufacturers shall certify that their modules meet the Load Switch and Signal Conflict Monitor Compatibility testing requirements found in the most recent, formally-adopted version of the specification titled "Pedestrian Traffic Control Signal Indications - Part 2: Light Emitting Diode (LED) Pedestrian Traffic Signal Modules," published by the Institute for Transportation Engineers (ITE).

MEASUREMENT AND PAYMENT. Audible/Tactile Pedestrian Pushbutton Station and Signs will be measured and paid for at the contract unit price each. The payment will be full compensation for furnishing and installing the push button stations, signs, equipment specified, all cables, labor, and incidentals necessary to complete this work.

Audible/Tactile Pedestrian Base unit will measured and paid for at the contract unit price per each . The payment will be full compensation for furnishing and installing the Audible/Tactile Pedestrian Base unit and all cables, labor, and incidentals necessary to complete this work.

CATEGORY 800
TRAFFIC

CATALOG CUTS AND WORKING DRAWINGS

DESCRIPTION. This work shall consist of the Contractor preparing and transmitting submittals to demonstrate the performance of the work will be in accordance with the Contract Documents. Submittal schedules, catalog cuts, shop drawings, installation methods, manufacturer's certifications, photometric data and working drawings shall be furnished on all Contractor furnished items for highway signing, sign lighting, highway lighting and traffic signals. Stakeouts of the sign locations shall be submitted for all sign structure locations as specified in the Contract Documents

MATERIALS. Not Applicable.

CONSTRUCTION.

Submittal Requirements. Submittals shall be scheduled and coordinated with the Contractor's construction schedule. A complete submittal schedule and list of required submittals shall be submitted with the first submittal, but no later than three days after the pre-construction conference. The schedule for submission of submittals shall be arranged so that related equipment items are submitted concurrently.

The Engineer may require changes to the submittal schedule to permit concurrent review of related equipment. Shop drawings for closely related items such as a sign and its support structures shall be submitted together.

Submittal Documents. Contractor's drawings shall be neat in appearance, legible and explicit to enable proper review to ensure Contract compliance. They shall be complete and detailed to show fabrication, assembly and installation details, wiring and control diagrams, catalog data, pamphlets, descriptive literature, and performance and test data. They shall be accompanied by calculations or other sufficient information to provide a comprehensive description of the structure, machine or system provided and its intended manner of use. If the Contractor's drawings deviate from the Contract Documents, the Contractor shall so advise the Engineer in writing with the submittal and state the reason therefor.

No portion of the work requiring a Contractor's drawing shall be started nor shall any materials be fabricated, delivered to the site, or installed prior to the approval or qualified approval of such item. Fabrication performed, materials purchased or on-site construction accomplished which does not conform to approved Contractor's drawings shall be at the Contractor's risk. The Administration will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.

Shop drawings shall show types, sizes, accessories, layouts including plans, elevations and sectional views, component, assembly and installation details, and all other information required to illustrate how applicable portions of the Contract requirements will be fabricated and installed. In case of fixed mechanical and electrical equipment, layout drawings drawn to scale, shall be
submitted to show required clearances for operation, maintenance and replacement of parts. Manufacturer's certified performance curves, catalog cuts, pamphlets, descriptive literature, installation and application recommendations, shall be provided and indicate conformance to the Contract Documents. Certifications shall be originals. Certification shall also be sent to the Office of Materials and Technology (OMT) as required in the Contract Documents.

Manufacturer's catalog, product and equipment data shall be certified and shall include materials type, performance characteristics, voltage, phase, capacity, and similar data along with wiring diagrams when applicable. Indicate catalog, model and serial numbers representing specified equipment. Provide complete component information to verify all specified required items. Installation recommendations and instructions shall provide written Manufacturer's detail step by step preparation and installation of the materials, and products including recommended tolerances and space for maintenance and operation.

Catalog cuts for sign luminaires shall have photometric data attached for each sign to be illuminated. Photometric printouts shall include the sign number, the illumination on a one foot square grid covering the entire sign face, the average illumination, the maximum to minimum uniformity ratio, and a working drawing for the sign face attached.

Catalog cuts for roadway luminaires shall have photometric data attached as specified in the Contract Documents.

The Contractor shall submit working drawings as required for changes, substitutions, contractor design items, and Contractor designed methods of construction. Requirements for working drawings will be listed in appropriate Specification Sections and in Special Provisions. Drawings shall be accompanied by calculations or other information to completely explain the structure, machine or system described and its intended use. Review and approval of such drawings by the Engineer shall not relieve the Contractor from his responsibility with regard to the fulfillment of the terms of the Contract.

Working drawings and calculations as submitted shall be sealed, dated and signed by a Professional Engineer registered in the State of Maryland.

The review and approval of Contractor's drawings by the Administration shall not relieve the Contractor from his responsibility with regard to the fulfillment of the terms of the Contract. The Contractor shall be responsible for the verification and accuracy of all dimensions and insuring that

all Contractor furnished items are compatible, and conform to all design and performance criteria.

All risks of error and omission are assumed by the Contractor and the Engineer will have no responsibility therefor.

Submittal Process. Each Contractor's drawing submitted by the Contractor shall have affixed to it the following Certification Statement, signed by the Contractor:

"By this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and pertinent data and I have checked and coordinated each item with other applicable approved drawings and Contract requirements."

With the first submittal, submit a Contractor's submittal schedule, listing by Specification Section number, all submittals required and approximate date submittal will be forwarded.

Each submittal having catalog descriptions, shop drawings, working drawings, photometric data, manufacturer's certifications, method of construction and manufacturer's installation recommendations shall be submitted for approval to:

Chief, Traffic Operations Division
Maryland State Highway Administration
7491 Connelley Drive
Hanover, Maryland 21076

Each submittal shall have a transmittal page that indicates the Contractor’s and Subcontractor's address and phone numbers. Submittals containing multiple items need the identification only on the exterior of each package. For original submittals, and each subsequent resubmittal that may be required, 9 copies will be submitted for projects administered by the District, and 6 copies will be submitted for projects administered by Office Of Traffic and Safety. A separate copy shall be forwarded to the Engineer.

All submittals for approval shall have the following identification data, as applicable, contained thereon or permanently adhered thereto.

(a) Drawing title, drawing number, TIMS number, TOD number, revision number, and date of drawing and revision.
(b) Applicable Contract Drawing Numbers and Specification Section and Paragraph Numbers.

The first page of every catalog description, working drawing and material certification shall be stamped in red with the following. All pertinent Contract Document information shall be filled in the spaces provided.

MARYLAND STATE HIGHWAY ADMINISTRATION
SUBMITTAL PACKAGE #_____ DATED CONTRACT # _____ LOCATION PROJECT DESC. ITEM # _____ THIS ITEM CONTAINS_____ PAGES ITEM DESCRIPTION
☐ ACCEPTED ☐ ACCEPTED AS NOTED ☐ REJECTED - REVISE & RESUBMIT
REVIEWERS NAME DATE

The Contractor shall indicate the submittal package by sequential numbering and date of submittal. Catalog, product data or brochure submittals containing various products, sizes and materials shall be underscored or highlighted to indicate the salient features required to meet the specifications. Likewise, items not applicable to the Contract shall be marked "not applicable" or crossed out.

If one or more of the items in a submittal are not approved, resubmittal of only the unapproved items is required, highlighted to show the particular item being resubmitted. Resubmittals shall bear original submittal number and be lettered sequentially.

Three copies of all Contractor's drawings will be returned to the Contractor.

Each submittal shall be in accordance with the Contractor's submission schedule. Allow thirty days for checking and appropriate action by the Engineer.

Contractor's submittals will be returned, marked with one of the following classifications:

ACCEPTED: no corrections, no marks

ACCEPTED AS NOTED: a few minor corrections. Item shall be installed in accordance with the corrected drawings.

REJECTED - REVISE & RESUBMIT: requires corrections or is otherwise not in accordance with the Contract Documents. No items shall be fabricated. Correct and resubmit drawings as per original submission. Allow thirty days for checking and appropriate action by the Engineer.

MEASUREMENT AND PAYMENT. Catalog cuts, manufacturer's certifications, photometric data and working drawings will not be measured but the cost will be incidental to the pertinent items specified in the Contract Documents.

CATEGORY 800
TRAFFIC

GALVANIZED TRAFFIC SIGNAL PEDESTAL POLES AND TRANSFORMER BASES

DESCRIPTION. This work shall consist of furnishing and installing galvanized traffic signal pedestal poles and transformer bases at locations specified in the Contract Document or as directed by the Engineer.

MATERIALS. Design shall meet 1994 edition of AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals except as noted. All welding shall conform to American Welding Society (AWS) Structural Welding Code D1.1 - Steel, Tubular Structures.

Each pedestal pole's height shall be determined by the total height of the pedestal pole including the transformer base.

(a) 10 ft pole height shall consist of a 103 in. steel shaft with a steel base plate plus a 17 in. transformer base.

(b) 14 ft pole height shall consist of a 151 in. steel shaft with a steel base plate plus a 17 in. transformer base.

(c) 20 ft pole height shall consist of a 240 in. steel shaft with a steel base plate plus a 17 in. transformer base.

Each pedestal pole furnished shall consist of a design from a steel shaft with a steel base plate, transformer base and all miscellaneous hardware.

(a) The pedestal pole shaft shall be fabricated of one length and shall have one longitudinal weld, parallel to the long axis of the pedestal pole shaft, with no transverse welds. The longitudinal weld shall be finished to form a smooth outside surface and the wall of the pedestal pole shaft shall be uniform in thickness including the welded area. The pedestal pole shaft shall be round or multi-sided (less than eight sides not acceptable) in cross section. 14 ft units shall be uniformly tapered from butt to tip with a 1 in. reduction in diameter for each 7 ft in length (0.14 in./ ft). 10 ft unit shall not be tapered.

(1) 10 ft pedestal pole shaft shall be 4-1/2 in. outside diameter, Schedule 40 pipe, and conform to A 501.

(2) All 14 ft pedestal poles shall be 7-1/2 in. outside diameter at the base and shall be made of 11 gauge (0.119 in.) thickness steel conforming to A 595, Grade A or equivalent.

(3) All 20 ft pedestal poles shall be 7-1/2 in. outside diameter at the base and shall be made of 3 gauge (0.25 in.) thickness steel conforming to A 595, Grade A or equivalent

(b) The base plate material shall meet the requirements of A 709, Grade 36. The base plate shall be secured to the lower end of the pedestal pole shaft by two continuous electric arc welds. The base plate shall telescope the pedestal pole shaft with one weld on the inside of the base plate at the end of the pedestal pole shaft. The remaining weld shall be located on the outside of the base plate at the top of the pedestal pole shaft. The weld connection shall develop the full strength of the adjacent pedestal pole shaft to resist bending action. All bases plate shall be fabricated with the holes for anchor bolts to the size and location dimensions as shown in MD-818.16 and 818.17.

(c) 14 ft pedestal poles shall be furnished with entrance ways for cable as noted on the appropriate detail. These holes shall be factory drilled and a straight tapped coupling, conforming to Underwriters Laboratory's UL-6 Specification, for 2 in. rigid conduits, shall be installed for each hole. A nipple with a unitized hexagonal fitting and integral inside radius on one end shall then be installed and fully seated on the interior side of the coupling. Location and installation of the coupling shall be as shown in MD-818.17.

(d) All pedestal poles and hardware, except materials manufactured from stainless steel or cast aluminum, shall be hot dipped galvanized. The galvanized coating shall conform to the thickness, adherence and quality requirements of A 123 and A 153 for hardware. Threaded components shall be chased and cleaned after galvanizing. All internally threaded components shall be tapped oversize the minimum amount required to permit assembly on the coated externally threaded fastener. Internally threaded components shall be provided with a lubricant which shall be clean and dry to the touch.

(e) Each pedestal pole shall be furnished with a removable domed cap, fabricated from cast aluminum, circumferentially attached to the side of the pole with three hex head type 304 stainless steel bolts (1/4 in. - 20 UNC).

(f) Each pedestal pole shall have an identification plate mechanically attached 6 in. above the pedestal pole base plate and oriented so that the identification plate may be read from a ground observation position.

(g) Recessed hub type, galvanized malleable iron plugs shall be inserted flush into all couplings.

Transformer Bases

(a) All transformer bases shall be approved by FHWA as meeting breakaway under NCHRP 350.

(b) Each transformer base shall be furnished with four hex head bolts, four hex head nuts and all associated hardware as shown on the appropriate detail for fastening the pedestal pole base plate to the top of the transformer base. All bolts shall conform to A 325 specifications and shall be galvanized.

Anchor Bolts

(a) Each pedestal pole anchor bolt shall be made of steel conforming to M 314, Grade 55 S1

(b) Anchor bolt threads shall be of cut thread design with a minimum 6 in. of threads at the top.

(c) The template and anchor plates shall be as shown on MD801.01.

(d) The diameter of the anchor bolt shall be stamped into the top of the threaded end of each anchor bolt.

(e) Each anchor bolt shall be provided with two attached heavy hex nuts and two attached flat washers.

(1) Anchor bolt nuts shall conform to A 194, grade 2 or 2H, or A 563, D or DH.

(2) All nuts shall be tapped oversize the minimum amount required to permit assembly on the coated externally threaded fastener.

(3) Washers shall conform to F 436.

(f) All nuts, washers, and the top 12 in. of all anchor bolts shall be hot dipped or mechanically galvanized. The galvanized coating shall conform to the thickness, adherence and quality requirements of A 123 or A 153 for hardware.

All high strength bolts (of a given length), nuts (of a given size) and washers (of a given diameter) shall be from the same manufacturing lot per each requisition of materials. The use of foreign made fasteners is prohibited!

CONSTRUCTION.

Refer to 818.03

MEASUREMENT AND PAYMENT.

Pedestal poles will be measured and paid for at the Contract unit price per each type of pole furnished and installed. The payment will be full compensation for furnishing and installing transformer base and all materials , labor, equipment, tools and incidentals necessary to complete work.

Anchor bolts will be measured and paid for as specified in Section 801.

Tag Detail

Mfg: _____ [1] Contract #: _____ [2]

Pole Diameter: _____ [3] Height: ____ [4] Gauge: ____ [5]

Anchor Bolts: _____ [6] Bolt Circle: _____ [7]

Tag Reference

[1] Name of the manufacturer of the pedestal pole.

[2] Administration Contract Number of the pedestal pole.

[3] Pole outside diameter at the base: 4-½ in. O.D. or 7-½ in. O.D.

[4] Pole height[1]: 10ft' , 14ft, 20 ft

[5] Pole gauge: Schedule 40 or 11 GA

[6] Anchor bolt size: 1 in. Dia. x 40 in. Length

[7] Bolt circle diameter: 11 in. Dia.

[1]Pole height includes the height of the pedestal pole and transformer base. Typically, the transformer base is 17 in. in height which corresponds to 10 ft pole having a height of 103 in.; and a 14 ft having a height of 151 in

800 TRAFFIC
LED COUNTDOWN PEDESTRIAN SIGNALS

DESCRIPTION. This work shall consist of furnishing and installing self-contained LED Pedestrian Countdown Signals, as specified in the Contract Documents or as directed by the Engineer.

MATERIALS. LED Pedestrian Signals and all component parts shall meet the latest edition of the National Electrical Manufacturers Association (NEMA) Standards and Underwriters Laboratory (UL), as applicable. In addition, LED Pedestrian Countdown signals shall meet the requirements set forth in the most recent, formally-adopted version of the specification titled "Pedestrian Traffic Control Signal Indications (PTCSI) - Part 2: Light Emitting Diode (LED) Pedestrian Traffic Signal Modules," published by the Institute for Transportation Engineers (ITE). All LED Pedestrian Countdown Signals shall be certified by the manufacturer to meet or exceed all requirements of that specification over their entire 5-year warranty period. All system components shall be ISO 9002 and CE certified. The advertising date of this Contract shall be used to determine the date of the applicable standards. Serial numbers and model numbers, if available, shall be permanently engraved on all removable components and hardware. The serial number and model number shall be etched, stamped, molded, or attached using metallic self-adhesive labels. The use of adhesive backed paper labels is not acceptable.

CONSTRUCTION.

LED Countdown Signal Modules.

- **(a)** LED countdown modules shall fit into existing 16-inch traffic signal housings built to PTCSI standards without modification to the housing.
- **(b)** The LED countdown module shall be a single, self-contained device, not requiring on-site assembly for installation into existing traffic signal housing.
- **(c)** The assembly of the LED countdown module shall be designed to assure all internal components are adequately supported to withstand mechanical shock and vibration from high winds and other sources.
- **(d)** The signal module shall be protected by a ¼ inch thick non-glare UV treated polycarbonate face lens.
- **(e)** The signal shall have 2 individual sets of wires for electrical connections. One set for the hand/man section and another for the countdown section. Each set shall be made of three secured, color coded (blue, red, white), 36 inches long, 600V, 16 AWG jacketed wires, rated for service at +105ºC, shall be provided

Environmental

(a) The LED countdown module shall be rated for use in the ambient operating temperature range of -40°C (-40°F) to +74°C (+165°F).

(b) The LED countdown module shall be completely sealed against dust and moisture intrusion per the requirements of NEMA Standard 250 – 1991 sections 4.7.2.1 and 4.7.3.2 for type 4 enclosures to protect all internal components.

Chromaticity

(a) The measured chromaticity coordinates for the white walking Person and the Portland Orange Hand and Digits shall conform to the chromaticity requirements of section 8.04 and figure 1 of the PTCSI standard.

(b) The chromaticity measurements shall remain unchanged over the input line voltage range of 80 VAC to 135 VAC.

Display

(a) The LED countdown signal module shall consist of a double overlay message combining the symbols of a Hand and walking Person and two “7 segment” digits forming the time display.

(b) The Pedestrian icon LEDs shall be arranged in a manner to form solid icon symbols. The shape of the symbols shall conform to the standard symbols for pedestrian signals.

(c) The LED's shall be distributed evenly along the in each Pedestrian icon. The distance between each LED shall be evenly spaced.

(d) The Hand/Person symbols shall be not less than 10" in height and 6.5" in width and shall incorporate sufficient LED’s to assure adequate luminous intensity.

(e) The countdown digits shall be a minimum of 9" high and shall be made of 2 rows of at least
144 LED's.

(f) The Portland Orange LED's shall be of the latest Alln GaP technology and the white LED's of the latest In GaN technology.

(g) The individual LED light sources shall be interconnected so that a catastrophic failure of a single LED will result in a total loss of not more than 3 LED's or 5% of the signal light output.

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Drive circuitry

(a) The LED drive current shall be regulated to compensate for line voltage fluctuations over the range of 80VAC to 135 VAC. The luminous output shall not vary more than 1% over the voltage range and shall not be perceptible to the human eye.

(b) The drive circuitry shall include voltage surge protection to withstand high-repetition noise transients and low-repetition high-energy transients as stated in section 2.1.6, NEMA Standard TS-2, 1992.

(c) The on-board circuitry shall meet FCC title 47, Sub-Part B, Section 15 regulations concerning the emission of electronic noise.

(d) The circuitry shall ensure compatibility and proper triggering and operation of load switches and conflict monitors in signal controllers currently in use by the procuring traffic authority.

(e) The countdown signal shall not be activated by input signals under 80 VAC.

(f) The "countdown" portion of the signal shall have a high "off state" input impedance to ensure it does not prevent the conflict monitor from detecting an open load failure on the pedestrian signals. The input impedance of the countdown signal shall be such as to produce a load switch leakage voltage above 25 VAC to the conflict monitor for up to 4 units per channel.

(g) The countdown signal drive circuitry shall not suffer any damage when subjected to defective load switches providing a half wave signal output.

(h) Typical power consumption of the countdown display shall not exceed 5 watts with a power factor greater than 90%.

Countdown Function.

(a) The countdown module shall be compatible with all types of traffic controllers in existence.

(b) The countdown timer module shall have a micro-processor capable of recording it's own time when connected to a traffic controller.

(c) When connected, the module shall blank out the display during the initial cycle while it records the countdown time using the Walk & D/Walk signal indications.

(d) The display of the number of remaining seconds shall begin only at the beginning of the pedestrian change interval.

(1) After the countdown displays "zero," the display shall remain dark until the beginning of the next countdown.

(2) The countdown pedestrian signal shall display the number of seconds remaining until the termination of the pedestrian change interval.

(3) Countdown displays shall not be used during the walk interval, nor during the yellow change interval of a concurrent vehicular phase.

(d) The countdown timer module shall continuously monitor the traffic controller for any changes to the pedestrian phase time and re-program itself automatically if needed.

(e) The countdown module shall register the time for the walk and clearance intervals individually and shall begin counting down from the start of the clearance time or the sum of both interval times if selected.

(f) If the walk interval is pre-empted (emergency vehicle), the countdown module shall skip the remaining walk time and begin the clearance interval countdown to reach 0 at the same time as the flashing hand becomes solid.

(g) If the clearance interval is pre-empted (train), the countdown module shall skip the remaining clearance time and reach 0 at the same time as the flashing hand becomes solid.

(h) In the cycle following a pre-emption call, the signal shall display the correct time and not be affected by the reduced previous cycle. The countdown shall always reach 0 at the same time as the flashing hand becomes solid.

(i) When the flashing hand becomes solid, the module shall display "0" for one second and then blank-out.

(j) The countdown timer shall be capable of timing 2 consecutive complete pedestrian cycles outputted by the traffic controller (no steady hand signal between cycles).

(k) The countdown module shall have an internal conflict monitor preventing any possible conflicts between the Hand/Person signal indications and the time display. It shall be impossible for the countdown to display any time during a solid hand indication.

(l) The countdown module shall have accessible dip-switches for the following user selectable options:

(1) Display 0 during stand-by.
(2) Turn on all LEDs for testing
(3) "Coordinated" mode, (displays clearance time only)
(4) Disable countdown display.

(m) The LED module shall have a removable plug on the rear of the unit to allow for easy access to dip switches.

(n) If the pedestrian change interval is interrupted or shortened as a part of a transition into a preemption sequence, the countdown pedestrian signal display shall be discontinued and go dark immediately upon activation of the preemption transition.

Housing. Countdown Pedestrian Signals shall be have a single piece cast aluminum case housing, a lens, and a single piece cast aluminum swing down door frame.

(a) The maximum overall dimension of the signal shall be 18.5" W x 18.75" H x 9" D. (470 x 476 x 229 mm), including the visor and hinges. The distance between the mounting surfaces of the upper and the lower openings shall be 15.75" (400 mm).

(b) The case shall be one piece corrosion resistant aluminum alloy die casting, complete with integrally cast top, bottom, sides and back.

(1) Four integrally cast hinge lug pairs, two at the top and two at the bottom of each case, shall be provided for operation of the swing down door.

(2) When properly mated to other pedestrian signal components and mounting hardware, the case shall provide a dustproof and weatherproof enclosure and shall provide for easy access to and replacement of all components.

(3) The case shall be mounted via upper and lower openings, suitable for either post top or bracket mounting. The openings shall accommodate standard 1.5" (39 mm) pipe brackets. The bottom opening of the case shall have a shurlock boss integrally molded into the case. The dimension of the shurlock boss shall be:

(a) Outside diameter 2.625" (667 mm)
(b) Inside diameter 1.969" (50 mm)
(c) Number of teeth 72
(d) Angle of teeth 90°
(e) Depth of teeth 5/64" (2 mm) inch.

A shurlock boss of the same dimensions shall be an option for the top opening of the case. The radial angular grooves of the shurlock boss, when used with the shurlock fittings, shall provide positive positioning of the entire signal to eliminate rotation or misalignment of the signal.

(c) The door frame shall be a one piece corrosion resistant aluminum alloy die casting, complete with two hinge lugs cast at the bottom and two latch slots cast at the top of each door.

(1) The door shall be attached to the case by means of two Type 304 stainless steel spring pins.
(2) Two stainless steel hinged bolts with captive stainless steel wingnuts and washers shall be attached to the case with the use of stainless steel spring pins.
(3) Latching or unlatching of the door shall require no tools.

Warranty. Manufacturers shall provide a written warranty with the following minimum provisions:

(a) LED countdown signal modules shall be replaced, repaired or purchase value refunded if the module fails to function as intended due to workmanship or material defects within the first 60 months from the date of delivery.
(b) LED countdown signal modules which exhibit luminous intensities less than the minimum specified values within the first 60 months of the date of delivery shall be replaced, repaired or purchase value refunded.

Compatibility Testing: The LED Pedestrian Countdown Signal manufacturer shall certify that their equipment meets the Load Switch and Signal Conflict Monitor Compatibility testing requirements found in the most recent, formally-adopted version of the specification titled “Pedestrian Traffic Control Signal Indications - Part 2: Light Emitting Diode (LED) Pedestrian Traffic Signal Modules,” published by the Institute for Transportation Engineers (ITE).

MEASUREMENT AND PAYMENT. LED Pedestrian Countdown Pedestrian Signals will be measured and paid for at the contract unit price each. The payment will be full compensation for furnishing and installing the signals, LED modules, equipment specified, all mounting hardware, labor, and incidentals necessary to complete this work.

6-09-05

CATEGORY 800
TRAFFIC

MAST ARMS AND MAST ARM POLES - SINGLE, TWIN AND TRIPLE

DESCRIPTION. This work shall consist of furnishing and installing galvanized traffic signal mast arms and mast arm poles at locations specified in the Contract Document or as directed by the Engineer.

MATERIALS. Design shall meet the 1994 edition of AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals except as noted. All welding shall conform to American Welding Society (AWS) Structural Welding Code D1.1 - Steel, Tubular Structures.

Each mast arm(s) and mast arm pole structure furnished shall consist of a design from a steel pole shaft with a steel base plate and flange plate, steel mast arm shaft(s) with steel flange plate(s), four flange bolts per mast arm, four anchor bolts and miscellaneous hardware.

(a) The mast arms and mast arm poles shall be manufactured from steel tubing conforming to A 595 Grade A or equal. Each mast arm and mast arm pole shall be fabricated of one length and shall have one longitudinal weld, parallel to the long axis of the mast arm or mast arm pole, with no transverse welds. The longitudinal weld shall be finished to form a smooth outside surface and the wall of the mast arms and mast arm poles shall be of uniform thickness including the welded area. The mast arms and mast arm poles shall be round or multi-sided (8 sides or more) in cross section and be uniformly tapered from butt to tip with a 1 in. reduction in diameter for each 7 ft in length (0.14 in./ ft). Mast arms shall be of two piece design for all mast arms 50 ft and 60 ft in length. Mast arms shall be of three piece design for all mast arms 70 ft in length. Any combination of two piece of 50 ft and 60 ft arms of the same butt diameter shall fit together and any combination of two or three piece of 60 ft and 70 ft mast arms in sequence shall fit together. The bolted splice for two or three piece mast arms shall be as specified in the Contract Document.

(1) 50 ft mast arms shall have a butt section 30 ft in length.

(2) 60 ft and 70 ft mast arms shall have a butt section of 35 ft in length.

(3) 38 ft single piece mast arms shall be 9 in. outside diameter at the flange plate and shall be made of 7 gauge (0.179 in.) thickness steel.

(4) 50 ft two piece mast arm butt sections shall be 10 in. outside diameter at the flange plate and shall be made of 3 gauge (0.250 in.) thickness steel.

(5) 60 ft two piece and 70 ft three piece mast arm butt sections shall be 12.5 in. outside diameter at the flange plate and shall be made of 3 gauge (0. 250 in.) thickness steel.

(6) All extension sections of two and three piece mast arms shall be made of 7 gauge (0.179 in.) thickness steel.

(7) Single 27 ft mast arm pole designed with a 38 ft mast arm length shall be 12 in. outside diameter at the base plate and shall be made of 7 gauge (0.179 in.) thickness steel.

(8) Single 27 ft mast arm pole designed with a 50 ft mast arm length shall be 13 in. outside diameter at the base plate and shall be made of 3 gauge (0.250 in.) thickness steel.

(9) Single 27 ft mast arm pole designed with 60 ft or 70 ft mast arm lengths shall be 15 in. outside diameter at the base plate and shall be made of zero gauge (0.312 in.) thickness steel.

(10) Twin 27 ft mast arm poles designed with 50 ft mast arm lengths shall be 13 in. outside diameter at the base plate base and shall be made of 3 gauge (0.250 in.) thickness steel.

(11) Twin 27 ft mast arm poles designed with mast arm lengths for one mast arm of 50 ft and the remaining mast arm of 60 ft or 70 ft shall be 15 in. outside diameter at the base plate and shall be made of zero gauge (0.312 in.) thickness steel.

(12) Triple 27 ft mast arm pole designed with mast arm lengths for one mast arm of 38 ft, second mast arm of 60 or 70 ft and the third mast arm of 50 ft shall have 15 in. outside diameter at the base plate and shall be made of zero gauge (0.312 in.) thickness steel.

(b) The material for mast arm pole base plate shall conform to A 709, Grade 36 and shall be of sufficient size and strength. The base plate shall be secured to the lower end of the mast arm pole by two continuous electric arc welds. The base plate shall telescope the mast arm pole with one weld on the inside of the base plate at the end of the mast arm pole shaft. The remaining weld shall be located on the outside of the base plate, around the circumference of the mast arm pole. The weld connection shall develop the full strength of the adjacent mast arm pole shaft to resist bending action. All base plates shall be fabricated with the holes for anchor bolts to the size and location dimensions as shown

on the appropriate detail.

(c) All mast arms and mast arm poles shall be furnished with flange plate(s) as noted in the details. These attachments, including the bolts, shall be connected in such a manner as to develop the minimum guaranteed yield and ultimate tensile strength for the mast arm and mast arm pole. This assembly shall be capable of transferring the maximum moment being carried by the mast arm without distortion or rotation of the mast arm or the attachment. Flange plate(s) shall be connected by the use of 4 bolts. The size of the plates and bolts shall be as shown in the details. Four (1-1/2 in. O.D.) rubber grommets shall be furnished for each mast arm to accommodate signal heads wiring access.

(d) The mast arm flange plate shall be secured to the lower end of the mast arm pole by two continuous electric arc welds. The mast arm flange plate shall telescope the mast arm with one weld located on the inside of the flange plate at the end of the mast arm. The remaining weld shall be located on the outside surface of the flange plate around the circumference of the mast arm pole. The weld connections shall develop the full strength of the adjacent mast arm to resist bending action.

(e) Mast arm flange plates and mast arm pole flange plates surfaces shall be plane to within 1/16 in. and shall be free of any buildup of galvanizing (drips, runs, etc.) which would prevent intimate contact between the connecting surfaces.

(f) Access hole frames shall be welded into the mast arm pole as detailed in MD 818.11. A galvanized steel cover, conforming to A 709, Grade 36 shall cover the access hole frame. The access hole cover's top shall be secured to the access hole frame by a hinge fabricated from 0.063 in. stainless steel using a 0.120 in. diameter stainless steel hinge pin. The hinge shall be secured to the access hole frame by 2 (1/4 in. - 20 UNC) hex head stainless steel bolts. The hinge shall be secured to the access hole cover by 2 (1/4 in. - 20 UNC) hex head stainless steel bolts and lock nuts. A slotted opening shall be provided at the bottom of the access hole cover to allow for attachment of a furnished (1/4 in. - 20 UNC) hex head stainless steel bolt into the access hole frame face.

(g) A 3/8 in. diameter X 1 in. stud copper servit post for two #6 AWG stranded wire shall be furnished into the bottom of the access hole frame.

(h) Mast arm poles shall be provided with entrance ways for cable as noted on the appropriate detail. These holes shall be factory drilled and a straight tapped coupling, conforming to Underwriters Laboratory's UL-6 Specification, for 3 in. rigid conduits, shall be installed for each hole. A nipple with a unitized hexagonal fitting and integral inside radius on one end shall then be installed and fully seated on the interior side of the coupling. Location and installation of the coupling shall be as shown in the details.

(i) "J" hooks shall be installed as follows, located 1 ft above the highest mast arm T dimension.

(1) A single "J" hook shall be welded inside the pole for single mast arm poles.

(2) Two "J" hooks shall be welded inside the pole for twin mast arm poles and triple mast arm poles.

(j) All mast arms, mast arm poles, access hole frames and hardware, except materials manufactured from stainless steel or cast aluminum, shall be hot dipped galvanized. The galvanized coating shall conform to the thickness, adherence and quality requirements of A 123 or A 153 for hardware. Threaded components shall be chased and cleaned after galvanizing. All internally threaded components shall be tapped the minimum amount required to permit assembly on the coated externally threaded fastener. Internally threaded components shall be provided with an lubricant which shall be clean and dry to the touch.

(k) Each mast arm pole shall be furnished with four removable ornamental anchor bolt covers made of cast aluminum. Bolt holes for attaching the bolt covers to the base plate shall be drilled at the location obtained by following the diagonal line of the base plate until it intersects the bolt circle diameter, then proceeding tangentially from the bolt circle diameter a distance equal to the Anchor Bolt Center to Bolt Slot Center Distance as provided in the MD 818.14. Attachment to the base shall be made using hex head stainless steel bolts (1/4 in.- 20 UNC).

(l) Each mast arm extension section and mast arm pole shall be furnished with a removable domed cap, fabricated from cast aluminum, circumferentially attached to the outside of the pole shaft or mast arm end with 3 hex head stainless steel bolts (1/4 in.- 20 UNC). All mast arm caps shall have inside diameter one in. Larger than the outside diameter of mast arm end.

(m) Each mast arm and mast arm pole shall have an identification plate mechanically attached, oriented such that the identification plate may be read from a ground observation position.

(1) Single piece mast arms and the butt section of two and three piece mast arms shall have the identification plate attached 6 in. above the flange plate.

(2) Each extension section of two and three piece mast arms shall have the identification plate attached 6 in. from the larger diameter end.

(3) Poles shall have the identification plate attached 6 in. above the bottom flange plate.

(n) Recessed hub type, galvanized malleable iron plugs shall be inserted flush into all mast arm pole couplings.

Anchor Bolts.

(a) Each mast arm pole anchor bolt shall be made of steel in accordance with F1554, Grade 55 S1.

(b) Anchor bolt threads shall be of cut thread design with a minimum 9 in. of threads at the top and bottom.

(c) The template and anchor plates shall be as shown the contract documents.

(d) The diameter of the anchor bolt shall be stamped into the top of the threaded end of each anchor bolt.

(e) Each anchor bolt shall be provided with two anchor bolt nuts and two flat washers.

(1) Anchor bolt nuts shall conform to A 194 grade 2 or 2H or A 563 D or DH.

(2) All nuts shall be tapped oversize the minimum amount required to permit assembly on the coated externally threaded fastener.

(3) Washers shall conform to F436.

(f) All nuts, washers and the top 12 in. of all anchor bolts shall be hot dipped or mechanically galvanized. The galvanized coating shall conform to the thickness, adherence and quality requirements of A 123 or A 153 for hardware.

All high strength bolts (of a given length), nuts (of a given size) and washers (of a given diameter) shall be from the same manufacturing lot per each requisition of materials. The use of foreign made fasteners is prohibited!

Alternate Design. Alternate mast arm and mast arm pole designs will be considered provided the following qualifications are observed:

(a) Alternate mast arm designs may use sectional construction provided each section has a minimum length of 30 ft except for the outer most section.

(b) Overlap between sections shall be minimum 18 in.

(c) Bolt circle diameters shall be as specified in the Contract Document.

(d) Alternate post designs may be straight (not tapered) sections and shall have a base diameter equal to, or no greater than 1 in. more than, those values shown on the typicals.

(e) All alternate design shall be structurally equivalent to the original design and as approved by the Engineer.

CONSTRUCTION Refer to 818.03

MEASUREMENT AND PAYMENT. Furnish and install poles for mast arm(s) and mast arm(s) will be measured and paid for at the contract unit price per each type of pole and mast arm(s) size as specified in the Contract Document. The payment will be full compensation for furnishing & installing all materials including labor, equipment, materials, tools and incidentals necessary to complete the work.

Anchor bolts will be measured and paid for as specified in section 801.

Tag Details

Single Mast Arm Pole

Mfg: [1] Contract. #: [2]

Pole Height: [3]

Arm Sizes: [4]

Anchor Bolts: [5] Bolt Circle: [8]

Flange Bolts: [7]

One Piece Mast Arm

Mfg: [1] Contract #: [2]

Arm Length: [6]

Flange Bolts: [7]

Two or three Piece Mast Arm - Butt Section

Mfg: [1] Contract #: [2]

Butt For Arms: [4]

Flange Bolts: [7]

Connection Bolt: [9]

Two or three Piece Mast Arm –
Extension Section

Mfg:	[1]	Contract #:	[2]
Extension Arm:	[6]		
Connection Bolt:	[9]		

Twin Mast Arm Pole
(Identical Size Flange Plates)

Mfg:	[1]	Contract #:	[2]
Pole Height:	[3]		
Arm Sizes:	[4]		
Anchor Bolts:	[5]	Bolt Circle:	[8]
Flange Bolts:	[7]		

Twin Mast Arm Pole
(Different Size Flange Plates)

Mfg: [1] Contract #: [2]

Pole Height: [3]

Left Arm Sizes: [4]

Right Arm Sizes: [4]

Anchor Bolts: [5] Bolt Circle: [8]

Left Arm Flange Bolts: [7]

Right Arm Flange Bolts: [7]

Pole Type [10]

Triple Mast Arm Pole
(Different Size Flange Plates)

Mfg: [1] Contract #: [2]

Pole Height: [3]

Left Arm Sizes: [4]

Center Arm Sizes: [4]

Right Arm Sizes: [4]

Anchor Bolts: [5] Bolt Circle: [8]

Left Arm Flange Bolts: [7]

Center Arm Flange Bolts: [7]

Right Arm Flange Bolts: [7]

Tag Reference

[1] Name of the manufacturer of the mast arm or mast arm pole.

[2] Administration Contract Number of the mast arm or mast arm pole.

[3] 27 ft height.

[4] Mast Arm Size and Orientation[1]

Pole Gauge Size	Indicate
7 GA	38'
3 GA	50'
0 GA	60' or 70'

[5] Anchor Bolts

Pole Gauge Size	Indicate
7 GA	1-½" x 54" & 2 Washers
3 GA	1-¾" x 66" & 2 washers
0 GA	2" x 72" & 2 washers

[6] Mast Arm Length
-

Constructed Extension for arm length	Indicate
50'	50'
60'	60'-70'
70'	70'

[7] Flange Bolt Size[2]

Pole Gauge Size	Indicate
7 GA	1-¼" x 4" & washer
3 GA	1-½" x 5" & washer
0 GA	1-¼" x 6-½" & 2 flat washers & lock washer

[1]For twin mast arm poles with identical size flange plates, indicate **L & R** preceding the 50' mast arm size; for twin mast arm poles with different size flange plates, indicate either 50' or 60'-70' mast arm sizes in the corresponding Left Arm Size or Right Arm Size as oriented by the line bisecting the acute angle formed by the two mast arm pole flange plates. For triple mast arm poles with different size flange plates, indicate either 50', 60'-70' or 38' mast arm sizes in the corresponding Left Arm Size, Center Arm Size or Right Arm Size as oriented by the centerline of the mast arm pole center flange plate.

[2]For twin mast arm poles with identical size flange plates, indicate **L & R** preceding the 1-½" x 5" & washer Flange Bolt Size; for twin mast arm poles with different size flange plates, indicate either 1-½" x 5" & washer or 1-¼" x 6-½" & 2 flat washers & lock washer flange bolt sizes in the corresponding Left Flange Bolt Size or Right Flange Bolt Size as oriented by the line bisecting the acute angle formed by the two mast arm pole flange plates. For triple mast arm poles with different size flange plates, indicate either 1-½" x 5" & washer, 1-¼" x 6-½" & 2 flat washers & lock washer or 1-¼" x 4" & washer flange bolt sizes in the corresponding Left Flange Bolt Size, Center Flange Bolt Size or Right Flange Bolt size as oriented by the centerline of the mast arm pole center flange plate.

[8] Bolt Circle

Pole Gauge Size	Indicate
7 GA	16" Dia.
3 GA	18" Dia.
0 GA	22" Dia.

[9] Connection Bolt Size

Two or three Piece Arm Size	Indicate[3]
50'	5/8" x Var.
60'	5/8" x Var.
70'	5/8" x Var.

[10] Standard or Alternate Twin.

[3]Length to be determined by the successful bidder.

CATEGORY 800
TRAFFIC

SIGNAL EQUIPMENT TURN ON, PICK UP, REMOVAL AND MAINTENANCE

DESCRIPTION. This work shall consist of pick up of Administration furnished materials, removal of existing equipment, and maintenance of existing equipment as specified in the Contract Documents or as directed by the Engineer.

MATERIALS. Not applicable

CONSTRUCTION.

Equipment Turn On. The Contractor shall notify the Engineer and Traffic Operations Division representatives within 10 working days prior to completion of the project to allow the Administration to install any additional traffic control device.

The Contractor shall notify the Engineer and Traffic Operations Division representative five working days prior to the completion of the project to schedule a final inspection and turn-on.

The Contractor along with the engineer shall stakeout the proposed construction as indicated on the plan.

Pick-Up of Administration Furnished Materials. The Contractor shall notify the appropriate OOTS warehouse a minimum of 72 hours in advance of the anticipated pick up or delivery of materials. The OOTS signal and sign warehouses are located at:

7491 Connelley Drive
Hanover, Maryland 21076
Signal Phone 410-787-7667
Sign Phone 410-787-7670

The Contractor shall be responsible for the transportation, labor, equipment, tools and incidentals necessary to obtain and load any Administration furnished materials.

Materials not furnished by the Administration shall be furnished by the Contractor.

Removal and Disposal of Existing Material and Equipment. Concrete foundations shall be removed as specified in 207.03.01. All holes caused by this removal shall be backfilled, compacted and restored to surrounding conditions.

All existing hard rubber detectors and handholes not shown on the Plans shall be removed and the holes shall be backfilled, compacted and restored to surrounding conditions. The sidewalk where handholes are removed shall be reconstructed to the nearest tooled joint or expansion joint. The roadway where hard rubber detectors are removed shall be reconstructed in conformance with Administration utility patch repair standards.

Existing inductive loop detectors and magnetic detectors not shown on the Plans shall be disconnected.

The Contractor shall be responsible for disposal of all material not salvaged. Non-galvanized green painted structures may contain lead and the contractor will be responsible for proper disposal of such material.

Storage of Materials. Materials shall be bundled, stored, and protected in conformance with the manufacturer's recommendations or as approved by the Engineer.

Maintenance of Materials and Equipment. The maintaining agency will continue maintenance of any existing signals until the Contractor places new equipment into operation.

When the Contractor's work requires adjustments to the traffic control devices to maintain the minimum Administration standards, the adjustments to the traffic control devices shall be made within 4 hours of verbal notification by the Engineer. If the Contractor fails to comply with this time period, the Administration will perform the adjustment and deduct the cost of the adjustment from the Contractor's payment.

Existing signals shall remain in their original condition until the new signals have been completed, satisfactorily tested and its operation accepted by the Engineer.

The Contractor shall maintain the continuous operation of all vehicular and pedestrian detectors. If any detector is damaged by the Contractor, it shall be repaired within 72 hours after notification by the Engineer.

All traffic signals and existing interconnect cable shall be operational and actuated as specified in the Contract Documents.

The Contractor shall plan the work to minimize interference with any existing traffic control device.

MEASUREMENT AND PAYMENT. The payment will be full compensation for all material, labor, equipment, tools, and incidentals necessary to complete the work for one or more of the items specified in the Contract Documents.

Equipment Turn On. Equipment Turn On will not be measured but the cost will be incidental to other pertinent items specified in the Contract Documents.

Pick-Up of Administration Furnished Materials. Pick-up of Administration furnished materials will not be measured but the cost will be incidental to other pertinent items specified in the Contract Documents.

Removal and Disposal of Existing Signal Material and Equipment. Removal and disposal of existing signal material and equipment will be measured and paid for at the Contract unit lump sum price.

Maintenance of Existing Signal Equipment. Materials storage, cable sealing and handling, adjustments to maintain minimum Administration standards on existing signals made necessary by new signal or geometric modifications and Contractor repair of any damaged detector caused as a result of Contractor's error will not be measured but the cost will be incidental to other pertinent items specified in the Contract Documents.

CATEGORY 800
TRAFFIC

UTILITY CONNECTIONS, AND UTILITY STAKEOUT

DESCRIPTION. This work shall consist of utility connections, and utility stakeout, as specified in the Contract Documents or as directed by the Engineer.

MATERIALS.

Disconnect Switches and Utility Connections 950.13.10

CONSTRUCTION. The Contractor shall arrange a meeting with the utility company representatives, Traffic Operations Division representatives, the Engineer and the District Utility Engineer as specified in the Contract Documents to establish a schedule for utility connections before any equipment or material is installed.

The Contractor shall not disconnect, de-energize, reconnect, tamper with, or otherwise handle any of a utility company's facilities. The Contractor shall be responsible for the utility service connections to the utility company's supplied point of service.

The Contractor shall make the necessary arrangements with the utility companies to insure having needed utilities available at the time of turn on. Any utility energization, connection or disconnection delays will not be considered a valid reason for any work time extension claim. Difficulties in securing utility company services are to be reported to the Engineer at the earliest possible time.

Utility Stakeout. The Contractor shall notify the appropriate agencies listed in the Contract Documents, and those listed below a minimum of 72 hours (excluding weekends and holidays) prior to the Contractor's anticipated beginning of any underground work.

a) In Montgomery County, request Montgomery County (240-777-2100) to stakeout their ITS and signal facilities.

b) Request the Statewide Operations Center (800-543-2515) to stake out SHA fibreoptic and communication cables.

c) Request the Communications Division (410-747-8590) to stake out ITS devices.

d) Request the ITS operations section (410-787-7662) to stake out ITS devices.

e) Request appropriate RME to stake out lighting.

f) Notify the Hanover Complex Signal Shop (410-787-7652) of all requests for signal and ITS stakeouts.

The Contractor shall plan the work to minimize interference with any existing traffic control devices.

Existing equipment shall remain in it's original condition until the new equipment has been completed, satisfactorily tested and its operation accepted by the Engineer.

MEASUREMENT AND PAYMENT. Utility Connection. Utility Service Equipment connections will be measured and paid for as specified in 807.04.01.

All utility company energization, connection or disconnection costs will be the responsibility of the Administration.

Utility Stakeout. Utility Stakeout will not be measured but the cost will be incidental to other pertinent items specified in the Contract Documents.

CATEGORY 800
TRAFFIC

VIDEO TRAFFIC DETECTION

DESCRIPTION. Furnish and install self-contained detection systems that monitor vehicles on a roadway via the machine vision processing of video images, and provide detector outputs to a traffic controller or similar device, as specified in the Contract Documents or as directed by the Engineer.

MATERIALS. Video traffic detection systems, cabinets, and all component parts shall meet the latest edition of the National Electrical Manufacturers Association (NEMA) Standards and Underwriters Laboratory (UL), as applicable.

Permanently engrave serial numbers and model numbers, if available, on all removable components and hardware. The serial number and model number shall either be etched, stamped, or molded. The use of adhesive backed labels is prohibited.

CONSTRUCTION.

System Hardware. The video traffic detection system shall consist of:

(a) A Video Detection Camera consisting of an integrated imaging CCD array with optics, image-processing hardware and a general-purpose CPU bundled into a sealed enclosure (hereinafter referred to as the Machine Vision Processor).

(b) Control Cables, in pre-manufactured lengths of 100 to 500 feet, as shown in the Contract Documents.

Machine Vision Processor (MVP). The MVP sensor is an integrated imaging CCD array with optics, high-speed, color, image-processing hardware and a general-purpose CPU bundled into a sealed enclosure. The MVP shall be equipped with a sunshield to reflect solar heat and to shield the CCD array from direct exposure to the sun, and a faceplate heater to melt accumulated ice, snow, or fog from the view of the camera.

(a) The CCD array shall be directly controlled by the general-purpose CPU, thus providing high video quality for detection that has virtually no noise to degrade detection performance.

(b) The optics and camera electronics shall be directly controlled for optimal illumination for traffic detection.

(c) The lens shall be pre-focused at the factory, as required for operation.

(d) It shall be possible for the user to focus the lens, as required for operation.

(e) The MVP sensor shall operate at a maximum rate of 30 frames per second when configured for the NTSC color video standard.

(f) The MVP sensor shall process a minimum of twenty detector zones placed anywhere in the field of view of the sensor.

(g) The video output shall have the ability to selectively show overlaid graphics indicating the current real-time detection state of each individual detector defined in the video.

(h) The sensor output NTSC color video shall be viewed with any compatible video-display device.

MVP Sensor Detector Types. The MVP sensor shall be programmable for a variety of detector types that perform specific functions. The general functions performed by the detectors shall include:

(a) Presence/passage detection of moving and stopped vehicles.

(b) Detection based on the direction of travel and/or exclusively for stopped vehicles.

(c) Measure speed.

(d) Generate a variety of alarms based on measured traffic conditions.

(e) Combine the output of several detectors with logical operators and optionally modify the cumulative state based on delay or extension timers and the state of any associated signal phase state.

(f) Each of the detector types shall optionally be made visible in the live video output of the sensor.

Functional Detection Capabilities. The system shall use software to select different detector types. These types shall include:

(a) Count detectors that output traffic volume statistics. These generate traffic counts and occupancy data.

(b) Presence detectors that indicate the presence of a vehicle, stopped vehicle, or vehicles traveling in the wrong direction.

(c) Speed detectors that provide vehicle counts, speed, length, and classification.

Other Functions.

(a) Detector Function combines outputs of multiple detectors via Boolean logic.

(b) Label displays information on the MVP video output and passes input information to other detectors.

(c) Detector Station collects and reports traffic data gathered over specified time intervals.

(d) Incident detectors monitor traffic parameters for conditions that suggest an incident has occurred, such as an accident or a stalled car that produce a sudden reduction in roadway capacity or throughput.

(e) Schedulers define plans that can be used by other detectors to specify different parameters for each time-of-day plan.

(f) Contrast Loss detectors monitor the quality of the video image that the MVP is processing.

(g) Speed Alarm generates alarm outputs based on user-defined algorithms using speed.

Supervisor Communications Port.

(a) The Video Traffic Detection system shall be compatible a supervisor communications port to provide general communications and system configuration.

(b) The MVP sensor shall use an RS-485 multi-drop network protocol to facilitate communications via a network of Rack Cards, Mini Hubs, Mini-Hub IIs or Mini-Hub TS2s to a remote or local PC client/server application.

(c) The communications port shall allow the user to update the embedded software with a new software release and interact with a PC client/server application for all of the various detection requests supported by the MVP sensor.

(d) The communications protocol over the supervisor communications port shall be the UDP/IP message packet and routing standard.

(e) This protocol shall be used throughout the field network of MVP sensors, hubs and the host PC server application.

Detector I/O Port

(a) The MVP sensor detector port shall provide a dedicated, RS-485, half-duplex interface between the MVP sensor and a detector port master such as a Rack Card, Mini Hub, Mini-Hub II, or Mini-Hub TS2.

(b) The real-time state of phase inputs shall be transmitted to the MVP sensor.

(c) The MVP sensor shall exchange input and output state data with the detector port master every 100 ms.

(d) The communications protocol shall be UDP/IP over the single twisted-pair wiring.

(e) A detector port master such as a Mini-Hub, Mini-Hub II, or Mini-Hub TS2 shall subsequently translate the detection states, in an electrically compatible manner, to a traffic signal controller:

(1) Single pin state outputs shall be applied by the interface card immediately upon receipt of the state change.

(2) Each on or off pulse shall be guaranteed a minimum pulse width of 100 ms.

(3) Speed outputs from 2 pins shall reflect the true output of the delay proportional to measured speed within ±1 ms.

Differential Video.

(a) The MVP sensor shall output full motion video using a differential video port in either NTSC or PAL format.

(b) The differential video shall be transmitted over a single twisted pair.

Power.

(a) The MVP sensor shall operate on 24 VAC/DC, 50/60 Hz at a maximum of 25 watts.

(b) The camera and processor electronics shall consume a maximum of 10 watts. The remaining 15 watts shall support an enclosure heater.

MVP Sensor Operations Log. The MVP sensor shall maintain a non-volatile operations log, which shall contain, at a minimum:

(a) Revision numbers for the current MVP sensor hardware and software components in operation.
(b) Title and comments for the detector configuration.
(c) Date and time the last detector configuration was downloaded to the MVP sensor.
(d) Date and time the operation log was last cleared.
(e) Date and time communications were opened or closed with the MVP sensor.
(f) Date and time of last power-up.
(g) Time-stamped, self-diagnosed hardware, and software errors that shall aid in system maintenance and troubleshooting.

MVP Sensor Vehicle Detection Performance. The real time detection performance of the MVP sensor shall be optimized by following the set of guidelines for:

(a) The traffic application to perform.
(b) MVP sensor mounting location.
(c) The number of traffic lanes to monitor.
(d) The sizing, placement, and orientation of vehicle detectors.
(e) Traffic approaching and/or receding from the sensor's field of view.
(f) Minimizing the effects of lane changing maneuvers.

Detection Zone Placement. The video detection system shall provide flexible detection zone placement anywhere and at any orientation within the field of view of the MVP sensor. Preferred detector configurations shall be:

(a) Detection zones placed across lanes of traffic for optimal count accuracy.
(b) Detection zones placed parallel to lanes of traffic for optimal presence detection accuracy of moving or stopped vehicles.
(c) A single detection zone shall be able to replace one or more conventional detector loops connected in series.
(d) Detection zones shall be able to be overlapped for optimal road coverage.
(e) In addition, selective groups of detectors shall be able to be logically combined into a single output by using optional delay and extend timing and signal state information.

(f) Optimal detection shall be achieved when the MVP sensor placement provides an unobstructed view of each traffic lane where vehicle detection is required. Examples of obstructions are not limited to fixed objects. Obstruction of the view can also occur when vehicles from a lane nearer to the sensor obscure the view of the roadway of a lane further away from the sensor.

(g) If the Video Detection Camera cannot be installed at a height of at least 17 feet, stop all work and immediately notify the Engineer.

Detection Zone Programming. The video traffic detection system shall be compatible with the placement of detection zones by means of a portable or desktop computer using the Windows 98 SE, NT 4.0, or 2000 operating systems, a keyboard, and a mouse.

(a) The VGA monitor shall be able to show the detection zones superimposed on images of traffic scenes.

(b) The mouse and keyboard shall be used to:

- **(1)** Place, size, and orient detection zones to provide optimal road coverage for vehicle detection.
- **(2)** Modify detector parameters for site geometry to optimize performance.
- **(3)** Edit previously defined detector configurations.
- **(4)** Adjust the detection zone size and placement.
- **(5)** Add detectors for additional traffic applications.
- **(6)** Reprogram the sensor for different traffic applications, changes in installation site geometry, or traffic rerouting.

(c) It shall be possible to:

- **(1)** Download detector configurations from the computer to the MVP sensor.
- **(2)** Upload the current detector configuration that is running in the MVP sensor.
- **(3)** Back up detector configurations by saving them to the computer's removable or fixed disks.
- **(4)** Perform the above upload, store, and retrieve functions for video snapshots of the MVP sensors' view.

Detection Zone Operation. The real-time detection operation of the video traffic detection system shall be verifiable through the following means:

(a) Viewing the video output of the sensor with any standard video display device (monitor).

- **(1)** The video output of the MVP sensor (differential twisted pair) shall be capable of selectively transmitting:
  - **(a)** Camera video only.
  - **(b)** Analog video overlaid with the current real-time detection state of each detector.
  - **(c)** Camera video with overlaid, scaled cross-hairs that are useful for aiming the sensor (during installation).
- **(2)** Individual detectors shall have the option of being hidden.

(b) Electrically monitoring assigned contact closure pinouts from a detector port master such as a Mini Hub TS1 interface card, Mini-Hub TS2 interface card, Detector Rack interface card, or Mini-Hub II interface card. Each pin of an interface card shall have one associated LED output to reflect its output state.

(c) Viewing the associated output LED state on the detector port master:

(1) An LED shall be ON when its assigned detector output or signal controller phase input is on.

(2) An LED shall be OFF when its assigned detector or signal controller input is off.

Count Detection Performance. Using a MVP sensor, the system shall be able to accurately count vehicles with:

(a) At least 96% accuracy under normal operating conditions (day and night).

(b) At least 93% accuracy under artifact conditions. Artifact conditions are combinations of weather and lighting conditions that result from shadows, fog, rain, snow, etc. The volume count shall be:

(1) Accumulated for the entire roadway (all traveled lanes).

(2) Accumulated over time intervals that contain a minimum of one hundred (100) vehicles to ensure statistical significance.

Demand Presence Detection Performance.

(a) Using a MVP sensor, the system shall be able to accurately provide demand presence detection.

(1) The demand presence accuracy shall be based on the ability to enable a protected turning movement on an intersection stop line, when a demand exists.

(2) The probability of not detecting a vehicle for demand presence shall be less than 1- percent error under all operating conditions.

(3) In the presence of artifact conditions, the MVP sensor shall minimize extraneous (false) protected movement calls to less than 7 %.

(4) To ensure statistical significance, the demand presence accuracy and error shall be calculated over time intervals that contain a minimum of one 100 protected turning movements.

(b) These performance specifications shall be achieved with a minimum of 2 presence detectors coupled with a single detector function to provide adequate road coverage to sample the random arrival patterns of vehicles at the stop line.

(c) The calculation of the demand presence error shall not include turning movements where vehicles do not pass through the presence detectors, or where they stop short or stop beyond the combined detection zones.

Speed Detection Performance. The MVP sensor shall accurately measure average (arithmetic mean) speed of multiple vehicles with at least 98% accuracy under all operating conditions for approaching and receding traffic.

(a) The average speed measurement shall include more than 10 vehicles in the sample to ensure statistical significance.

(b) Optimal speed detection performance requires the sensor location to follow the specifications described above for count station traffic applications with the exception that the sensor must be higher than 13 m (40) feet. The MVP sensor shall accurately measure individual vehicle speeds with more than:
- **(1)** 95% accuracy under all operating conditions for vehicles approaching the sensor (viewing the front end of vehicles).
- **(2)** 90% accuracy for vehicles receding from the sensor (viewing the rear end of vehicles).

(c) These specifications shall apply to vehicles that travel through both the count and speed detector pair and shall not include partial detection situations created by lane changing maneuvers.

MVP Sensor. The MVP sensor shall:

(a) Use color image sensors as the video source for real-time vehicle detection using NTSC format. As a minimum, each image sensor shall provide the following capabilities:
- **(1)** Images shall be produced with a CCD sensing element with horizontal resolution of at least 500 lines and vertical resolution of at least 350 lines.
- **(2)** Images shall be output as video conforming to NTSC specifications.

(b) Provide software JPEG video compression.

(c) Provide useable video and resolvable features in the video image when those features have luminance levels as low as 0.1 lux at night.

(d) Provide useable video and resolvable features in the video image when those features have luminance levels as high 10,000 lux during the day.

(e) Provide useable video and resolvable features in the video image when the ratio of the luminance of the resolved features in any single video frame is 300:1.

(f) Provide direct real-time iris and shutter speed control.

(g) Provide an image that is suitable for video traffic monitoring.

(h) Provide an optical filter and appropriate electronic circuitry shall be included in the image sensor to suppress “blooming” effects at night.

(i) Have gamma for the image sensor present at the factory to a value of 1.0.

(j) The MVP sensor, when placed at a mounting height that minimizes vehicle image occlusion and equipped with a lens to match the width of the road, is able to monitor a maximum of 6 to 8 traffic lanes simultaneously. For example, available infrastructure on which to mount MVP sensors is typically 13 m (40 ft) high, which can adequately cover 4 to 5 traveled lanes if the pole is within 3 m (10 ft) of the nearest traveled lanes.

MVP Sensor Optics. The MVP sensor shall be equipped with an integrated 12X zoom lens with zoom and focus capabilities that can be changed using either configuration computer software or hand-held controller.

MVP Sensor Enclosure. The MVP sensor and lens assembly shall be housed in an environmental enclosure that provides the following capabilities:

(a) The enclosure shall be waterproof and dust-tight to NEMA-4 specifications, and shall have the option to be pressurized with dry nitrogen to 5 ± 1 psi.
(b) The enclosure shall allow the MVP sensor to operate satisfactorily over an ambient temperature range from -34 degrees C to +74 degrees C while exposed to precipitation as well as direct sunlight.
(c) The enclosure shall allow the image sensor horizon to be rotated during field installation.
(d) The enclosure shall include a provision at the rear of the enclosure for connection of the factory-fabricated power, communications and video signal cable. Input power to the environmental enclosure shall be 24 VAC/DC and either 50 or 60 Hz.
(e) A heater shall be at the front of the enclosure to prevent the formation of ice and condensation in cold weather, as well as to assure proper operation of the lens' iris mechanism. The heater shall not interfere with the operation of the image sensor electronics, and it shall not cause interference with the video signal.
(f) The enclosure shall be light-colored and shall include a sun shield to minimize solar heating and glare. The front edge of the sunshield shall protrude beyond the front edge of the environmental enclosure and shall include provision to divert water flow to the sides of the sunshield. The amount of overhang of the sunshield shall be adjustable to prevent direct sunlight from entering the lens or hitting the faceplate.
(g) Mounting hardware shall be as specified by the enclosure manufacturer, however all nuts, bolts, and locknuts shall be Stainless Steel, regardless of the material specified by the manufacturer.
(h) The total weight of the image sensor in the environmental enclosure with sunshield shall be less than 2.7 kg (6 pounds).
(i) When operating in the environmental enclosure with the power, communication and video signal cable connected, the image sensor shall meet FCC class B and CE requirements for electromagnetic interference emissions.

MVP Sensor Electrical.

(a) The video output of the MVP sensor shall be isolated from earth ground.
(b) All video connections from the sensor to the interface panel shall also be isolated from earth ground.
(c) The video output, communication, and power stages of the sensor shall include transient protection to prevent damage to the sensor due to voltage transients occurring on the cable leading from the MVP sensor to other field terminations.
(d) Connections for video, communications and power shall be made to the image sensor using a single 18-pin circular metal shell connector.

(e) Cable from the camera to the control cabinet shall be one continuous section with a factory-installed connector at the camera only.
  (1) Splices shall not be permitted.
  (2) The cable shall be UV-stabilized, and as specified by the camera manufacturer in pre-made lengths of 100, 200, 300, 400 and 500 feet.
(f) The mating cable shall use a right-angle shell.
(g) It shall be the Contractor's responsibility to verify the cable length(s) prior to placing an order for the cable(s).

Video Interface Equipment. (This equipment is Furnished and Installed by SHA)
(a) Communications Interface Panel. The video traffic detection system shall be compatible with a communications panel that provides the following:
  (1) A terminal block for terminating power.
  (2) Terminated, four twisted-pair wiring to the image sensor.
  (3) 24 VAC input power, at less than 25 Watts, 50/60 Hz.
(b) The video traffic detection system shall be compatible with a TS-2 Mini Hub that provides field communications to the MVP using a RS-232 port and software, so that users may create detector layouts, configure the MVP, verify detector performance, and upload MVP traffic data. The RS-232 port shall convert differential video from the MVP via twisted pair and passes it to a BNC connector. Users can view the video from the MVP at this port.

Documentation. The equipment supplier shall provide three sets of operating manuals, service manuals, and maintenance instructions for each video traffic detection system installed.

MEASUREMENT AND PAYMENT. The payment will be full compensation for furnishing and installing the video traffic detection system components, all mounting hardware including camera to support structure, all cable connections within the control cabinet, software, instruction manuals, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

Video Detection Cameras will be measured and paid for at the Contract unit price per each.

Video Detection Camera to Controller cables will be measured and paid for at the Contract unit price per each pre-made length of 100, 200, 300, 400, or 500 Linear Feet.

NOTE: Video Interface Equipment is furnished and installed by SHA. The details above are for informational purposes only for the use of the Contractor.

CATEGORY 800
TRAFFIC

VIDEO TRAFFIC DETECTION

DESCRIPTION. Furnish and install self-contained detection systems that monitor vehicles on a roadway via the machine vision processing of video images, and provide detector outputs to a traffic controller or similar device, as specified in the Contract Documents or as directed by the Engineer.

MATERIALS. Video traffic detection systems, cabinets, and all component parts shall meet the latest edition of the National Electrical Manufacturers Association (NEMA) Standards and Underwriters Laboratory (UL), as applicable.

Permanently engrave serial numbers and model numbers, if available, on all removable components and hardware. The serial number and model number shall either be etched, stamped, or molded. The use of adhesive backed labels is prohibited.

CONSTRUCTION.

System Hardware. The video traffic detection system shall consist of:

(a) A Video Detection Camera consisting of an integrated imaging CCD array with optics, image-processing hardware and a general-purpose CPU bundled into a sealed enclosure (hereinafter referred to as the Machine Vision Processor).

(b) Control Cables, in pre-manufactured lengths of 100 to 500 feet, as shown in the Contract Documents.

Machine Vision Processor (MVP). The MVP sensor is an integrated imaging CCD array with optics, high-speed, color, image-processing hardware and a general-purpose CPU bundled into a sealed enclosure. The MVP shall be equipped with a sunshield to reflect solar heat and to shield the CCD array from direct exposure to the sun, and a faceplate heater to melt accumulated ice, snow, or fog from the view of the camera.

(a) The CCD array shall be directly controlled by the general-purpose CPU, thus providing high video quality for detection that has virtually no noise to degrade detection performance.

(b) The optics and camera electronics shall be directly controlled for optimal illumination for traffic detection.

(c) The lens shall be pre-focused at the factory, as required for operation.

(d) It shall be possible for the user to focus the lens, as required for operation.

(e) The MVP sensor shall operate at a maximum rate of 30 frames per second when configured for the NTSC color video standard.

(f) The MVP sensor shall process a minimum of twenty detector zones placed anywhere in the field of view of the sensor.

(g) The video output shall have the ability to selectively show overlaid graphics indicating the current real-time detection state of each individual detector defined in the video.

(h) The sensor output NTSC color video shall be viewed with any compatible video-display device.

MVP Sensor Detector Types. The MVP sensor shall be programmable for a variety of detector types that perform specific functions. The general functions performed by the detectors shall include:

(a) Presence/passage detection of moving and stopped vehicles.

(b) Detection based on the direction of travel and/or exclusively for stopped vehicles.

(c) Measure speed.

(d) Generate a variety of alarms based on measured traffic conditions.

(e) Combine the output of several detectors with logical operators and optionally modify the cumulative state based on delay or extension timers and the state of any associated signal phase state.

(f) Each of the detector types shall optionally be made visible in the live video output of the sensor.

Functional Detection Capabilities. The system shall use software to select different detector types. These types shall include:

(a) Count detectors that output traffic volume statistics. These generate traffic counts and occupancy data.

(b) Presence detectors that indicate the presence of a vehicle, stopped vehicle, or vehicles traveling in the wrong direction.

(c) Speed detectors that provide vehicle counts, speed, length, and classification.

Other Functions.

(a) Detector Function combines outputs of multiple detectors via Boolean logic.

(b) Label displays information on the MVP video output and passes input information to other detectors.

(c) Detector Station collects and reports traffic data gathered over specified time intervals.

(d) Incident detectors monitor traffic parameters for conditions that suggest an incident has occurred, such as an accident or a stalled car that produce a sudden reduction in roadway capacity or throughput.

(e) Schedulers define plans that can be used by other detectors to specify different parameters for each time-of-day plan.

(f) Contrast Loss detectors monitor the quality of the video image that the MVP is processing.

(g) Speed Alarm generates alarm outputs based on user-defined algorithms using speed.

Supervisor Communications Port.

(a) The Video Traffic Detection system shall be compatible a supervisor communications port to provide general communications and system configuration.

(b) The MVP sensor shall use an RS-485 multi-drop network protocol to facilitate communications via a network of Rack Cards, Mini Hubs, Mini-Hub IIs or Mini-Hub TS2s to a remote or local PC client/server application.

(c) The communications port shall allow the user to update the embedded software with a new software release and interact with a PC client/server application for all of the various detection requests supported by the MVP sensor.

(d) The communications protocol over the supervisor communications port shall be the UDP/IP message packet and routing standard.

(e) This protocol shall be used throughout the field network of MVP sensors, hubs and the host PC server application.

Detector I/O Port

(a) The MVP sensor detector port shall provide a dedicated, RS-485, half-duplex interface between the MVP sensor and a detector port master such as a Rack Card, Mini Hub, Mini-Hub II, or Mini-Hub TS2.

(b) The real-time state of phase inputs shall be transmitted to the MVP sensor.

(c) The MVP sensor shall exchange input and output state data with the detector port master every 100 ms.

(d) The communications protocol shall be UDP/IP over the single twisted-pair wiring.

(e) A detector port master such as a Mini-Hub, Mini-Hub II, or Mini-Hub TS2 shall subsequently translate the detection states, in an electrically compatible manner, to a traffic signal controller:

(1) Single pin state outputs shall be applied by the interface card immediately upon receipt of the state change.

(2) Each on or off pulse shall be guaranteed a minimum pulse width of 100 ms.

(3) Speed outputs from 2 pins shall reflect the true output of the delay proportional to measured speed within ±1 ms.

Differential Video.

(a) The MVP sensor shall output full motion video using a differential video port in either NTSC or PAL format.

(b) The differential video shall be transmitted over a single twisted pair.

Power.

(a) The MVP sensor shall operate on 24 VAC/DC, 50/60 Hz at a maximum of 25 watts.

(b) The camera and processor electronics shall consume a maximum of 10 watts. The remaining 15 watts shall support an enclosure heater.

MVP Sensor Operations Log. The MVP sensor shall maintain a non-volatile operations log, which shall contain, at a minimum:

(a) Revision numbers for the current MVP sensor hardware and software components in operation.
(b) Title and comments for the detector configuration.
(c) Date and time the last detector configuration was downloaded to the MVP sensor.
(d) Date and time the operation log was last cleared.
(e) Date and time communications were opened or closed with the MVP sensor.
(f) Date and time of last power-up.
(g) Time-stamped, self-diagnosed hardware, and software errors that shall aid in system maintenance and troubleshooting.

MVP Sensor Vehicle Detection Performance. The real time detection performance of the MVP sensor shall be optimized by following the set of guidelines for:

(a) The traffic application to perform.
(b) MVP sensor mounting location.
(c) The number of traffic lanes to monitor.
(d) The sizing, placement, and orientation of vehicle detectors.
(e) Traffic approaching and/or receding from the sensor's field of view.
(f) Minimizing the effects of lane changing maneuvers.

Detection Zone Placement. The video detection system shall provide flexible detection zone placement anywhere and at any orientation within the field of view of the MVP sensor. Preferred detector configurations shall be:

(a) Detection zones placed across lanes of traffic for optimal count accuracy.
(b) Detection zones placed parallel to lanes of traffic for optimal presence detection accuracy of moving or stopped vehicles.
(c) A single detection zone shall be able to replace one or more conventional detector loops connected in series.
(d) Detection zones shall be able to be overlapped for optimal road coverage.
(e) In addition, selective groups of detectors shall be able to be logically combined into a single output by using optional delay and extend timing and signal state information.

(f) Optimal detection shall be achieved when the MVP sensor placement provides an unobstructed view of each traffic lane where vehicle detection is required. Examples of obstructions are not limited to fixed objects. Obstruction of the view can also occur when vehicles from a lane nearer to the sensor obscure the view of the roadway of a lane further away from the sensor.

(g) If the Video Detection Camera cannot be installed at a height of at least 17 feet, stop all work and immediately notify the Engineer.

Detection Zone Programming. The video traffic detection system shall be compatible with the placement of detection zones by means of a portable or desktop computer using the Windows 98 SE, NT 4.0, or 2000 operating systems, a keyboard, and a mouse.

(a) The VGA monitor shall be able to show the detection zones superimposed on images of traffic scenes.

(b) The mouse and keyboard shall be used to:

- **(1)** Place, size, and orient detection zones to provide optimal road coverage for vehicle detection.
- **(2)** Modify detector parameters for site geometry to optimize performance.
- **(3)** Edit previously defined detector configurations.
- **(4)** Adjust the detection zone size and placement.
- **(5)** Add detectors for additional traffic applications.
- **(6)** Reprogram the sensor for different traffic applications, changes in installation site geometry, or traffic rerouting.

(c) It shall be possible to:

- **(1)** Download detector configurations from the computer to the MVP sensor.
- **(2)** Upload the current detector configuration that is running in the MVP sensor.
- **(3)** Back up detector configurations by saving them to the computer's removable or fixed disks.
- **(4)** Perform the above upload, store, and retrieve functions for video snapshots of the MVP sensors' view.

Detection Zone Operation. The real-time detection operation of the video traffic detection system shall be verifiable through the following means:

(a) Viewing the video output of the sensor with any standard video display device (monitor).

- **(1)** The video output of the MVP sensor (differential twisted pair) shall be capable of selectively transmitting:
  - **(a)** Camera video only.
  - **(b)** Analog video overlaid with the current real-time detection state of each detector.
  - **(c)** Camera video with overlaid, scaled cross-hairs that are useful for aiming the sensor (during installation).
- **(2)** Individual detectors shall have the option of being hidden.

(b) Electrically monitoring assigned contact closure pinouts from a detector port master such as a Mini Hub TS1 interface card, Mini-Hub TS2 interface card, Detector Rack interface card, or Mini-Hub II interface card. Each pin of an interface card shall have one associated LED output to reflect its output state.

(c) Viewing the associated output LED state on the detector port master:

(1) An LED shall be ON when its assigned detector output or signal controller phase input is on.

(2) An LED shall be OFF when its assigned detector or signal controller input is off.

Count Detection Performance. Using a MVP sensor, the system shall be able to accurately count vehicles with:

(a) At least 96% accuracy under normal operating conditions (day and night).

(b) At least 93% accuracy under artifact conditions. Artifact conditions are combinations of weather and lighting conditions that result from shadows, fog, rain, snow, etc. The volume count shall be:

(1) Accumulated for the entire roadway (all traveled lanes).

(2) Accumulated over time intervals that contain a minimum of one hundred (100) vehicles to ensure statistical significance.

Demand Presence Detection Performance.

(a) Using a MVP sensor, the system shall be able to accurately provide demand presence detection.

(1) The demand presence accuracy shall be based on the ability to enable a protected turning movement on an intersection stop line, when a demand exists.

(2) The probability of not detecting a vehicle for demand presence shall be less than 1- percent error under all operating conditions.

(3) In the presence of artifact conditions, the MVP sensor shall minimize extraneous (false) protected movement calls to less than 7 %.

(4) To ensure statistical significance, the demand presence accuracy and error shall be calculated over time intervals that contain a minimum of one 100 protected turning movements.

(b) These performance specifications shall be achieved with a minimum of 2 presence detectors coupled with a single detector function to provide adequate road coverage to sample the random arrival patterns of vehicles at the stop line.

(c) The calculation of the demand presence error shall not include turning movements where vehicles do not pass through the presence detectors, or where they stop short or stop beyond the combined detection zones.

Speed Detection Performance. The MVP sensor shall accurately measure average (arithmetic mean) speed of multiple vehicles with at least 98% accuracy under all operating conditions for approaching and receding traffic.

(a) The average speed measurement shall include more than 10 vehicles in the sample to ensure statistical significance.

(b) Optimal speed detection performance requires the sensor location to follow the specifications described above for count station traffic applications with the exception that the sensor must be higher than 13 m (40) feet. The MVP sensor shall accurately measure individual vehicle speeds with more than:
- **(1)** 95% accuracy under all operating conditions for vehicles approaching the sensor (viewing the front end of vehicles).
- **(2)** 90% accuracy for vehicles receding from the sensor (viewing the rear end of vehicles).

(c) These specifications shall apply to vehicles that travel through both the count and speed detector pair and shall not include partial detection situations created by lane changing maneuvers.

MVP Sensor. The MVP sensor shall:

(a) Use color image sensors as the video source for real-time vehicle detection using NTSC format. As a minimum, each image sensor shall provide the following capabilities:
- **(1)** Images shall be produced with a CCD sensing element with horizontal resolution of at least 500 lines and vertical resolution of at least 350 lines.
- **(2)** Images shall be output as video conforming to NTSC specifications.

(b) Provide software JPEG video compression.

(c) Provide useable video and resolvable features in the video image when those features have luminance levels as low as 0.1 lux at night.

(d) Provide useable video and resolvable features in the video image when those features have luminance levels as high 10,000 lux during the day.

(e) Provide useable video and resolvable features in the video image when the ratio of the luminance of the resolved features in any single video frame is 300:1.

(f) Provide direct real-time iris and shutter speed control.

(g) Provide an image that is suitable for video traffic monitoring.

(h) Provide an optical filter and appropriate electronic circuitry shall be included in the image sensor to suppress “blooming” effects at night.

(i) Have gamma for the image sensor present at the factory to a value of 1.0.

(j) The MVP sensor, when placed at a mounting height that minimizes vehicle image occlusion and equipped with a lens to match the width of the road, is able to monitor a maximum of 6 to 8 traffic lanes simultaneously. For example, available infrastructure on which to mount MVP sensors is typically 13 m (40 ft) high, which can adequately cover 4 to 5 traveled lanes if the pole is within 3 m (10 ft) of the nearest traveled lanes.

MVP Sensor Optics. The MVP sensor shall be equipped with an integrated 12X zoom lens with zoom and focus capabilities that can be changed using either configuration computer software or hand-held controller.

MVP Sensor Enclosure. The MVP sensor and lens assembly shall be housed in an environmental enclosure that provides the following capabilities:

(a) The enclosure shall be waterproof and dust-tight to NEMA-4 specifications, and shall have the option to be pressurized with dry nitrogen to 5 ± 1 psi.

(b) The enclosure shall allow the MVP sensor to operate satisfactorily over an ambient temperature range from -34 degrees C to +74 degrees C while exposed to precipitation as well as direct sunlight.

(c) The enclosure shall allow the image sensor horizon to be rotated during field installation.

(d) The enclosure shall include a provision at the rear of the enclosure for connection of the factory-fabricated power, communications and video signal cable. Input power to the environmental enclosure shall be 24 VAC/DC and either 50 or 60 Hz.

(e) A heater shall be at the front of the enclosure to prevent the formation of ice and condensation in cold weather, as well as to assure proper operation of the lens' iris mechanism. The heater shall not interfere with the operation of the image sensor electronics, and it shall not cause interference with the video signal.

(f) The enclosure shall be light-colored and shall include a sun shield to minimize solar heating and glare. The front edge of the sunshield shall protrude beyond the front edge of the environmental enclosure and shall include provision to divert water flow to the sides of the sunshield. The amount of overhang of the sunshield shall be adjustable to prevent direct sunlight from entering the lens or hitting the faceplate.

(g) Mounting hardware shall be as specified by the enclosure manufacturer, however all nuts, bolts, and locknuts shall be Stainless Steel, regardless of the material specified by the manufacturer.

(h) The total weight of the image sensor in the environmental enclosure with sunshield shall be less than 2.7 kg (6 pounds).

(i) When operating in the environmental enclosure with the power, communication and video signal cable connected, the image sensor shall meet FCC class B and CE requirements for electromagnetic interference emissions.

MVP Sensor Electrical.

(a) The video output of the MVP sensor shall be isolated from earth ground.

(b) All video connections from the sensor to the interface panel shall also be isolated from earth ground.

(c) The video output, communication, and power stages of the sensor shall include transient protection to prevent damage to the sensor due to voltage transients occurring on the cable leading from the MVP sensor to other field terminations.

(d) Connections for video, communications and power shall be made to the image sensor using a single 18-pin circular metal shell connector.

(e) Cable from the camera to the control cabinet shall be one continuous section with a factory-installed connector at the camera only.
  (1) Splices shall not be permitted.
  (2) The cable shall be UV-stabilized, and as specified by the camera manufacturer in pre-made lengths of 100, 200, 300, 400 and 500 feet.
(f) The mating cable shall use a right-angle shell.
(g) It shall be the Contractor's responsibility to verify the cable length(s) prior to placing an order for the cable(s).

Video Interface Equipment. (This equipment is Furnished and Installed by SHA)
(a) Communications Interface Panel. The video traffic detection system shall be compatible with a communications panel that provides the following:
  (1) A terminal block for terminating power.
  (2) Terminated, four twisted-pair wiring to the image sensor.
  (3) 24 VAC input power, at less than 25 Watts, 50/60 Hz.
(b) The video traffic detection system shall be compatible with a TS-2 Mini Hub that provides field communications to the MVP using a RS-232 port and software, so that users may create detector layouts, configure the MVP, verify detector performance, and upload MVP traffic data. The RS-232 port shall convert differential video from the MVP via twisted pair and passes it to a BNC connector. Users can view the video from the MVP at this port.

Documentation. The equipment supplier shall provide three sets of operating manuals, service manuals, and maintenance instructions for each video traffic detection system installed.

MEASUREMENT AND PAYMENT. The payment will be full compensation for furnishing and installing the video traffic detection system components, all mounting hardware including camera to support structure, all cable connections within the control cabinet, software, instruction manuals, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

Video Detection Cameras will be measured and paid for at the Contract unit price per each.

Video Detection Camera to Controller cables will be measured and paid for at the Contract unit price per each pre-made length of 100, 200, 300, 400, or 500 Linear Feet.

NOTE: Video Interface Equipment is furnished and installed by SHA. The details above are for informational purposes only for the use of the Contractor.

CATEGORY 800
TRAFFIC

SECTION 804 — GROUNDING

571 **804.01 DESCRIPTION.**

ADD: As the last sentence to the paragraph: "Grounding of overhead communication cable messenger cable attached to an utility company owned pole shall also conform to the utility company's requirements."

804.03 CONSTRUCTION.

804.03.01 Equipment Grounding System

CHANGE: In the third line the terminology "conduit system, grounding conductors, ground rods and terminations " to read "conduit system, span wire, steel poles, grounding conductors, communications cable steel spans, ground rods, steel span wire back guying, steel span wire pole to pole guying, and steel span wire slack spans and terminations."

INSERT: As the second paragraph.

Grounding for overhead communications cable shall be to all of the following when present: at the telephone and CATV cables support span wires, at the ground wire of a multigrounded system, at the neutral wire of a multigrounded system and, at the ground of a secondary circuit with approved span wire grounding clamps. Grounding to the overhead communication cable support span at utility company owned poles shall be with a vise type body clamp equipped with jaws having teeth to pierce the insulation, without stripping the jacket on the overhead communications cable span wire, and operated by a single hexagonal head bolt.

804.03.05 Terminations

INSERT: As the last sentence to the paragraph.

Overhead communication cable shall be made with connectors installed at the first attachment on a utility company owned pole in the following method: at the last attachment on the pole, at every fifth attachment between the first and last attachment on the pole, at

each attachment where power, CATV and telephone cables continue onto differing poles, at each attachment where power CATV and telephone cables converge onto the same pole, at attachments on poles equal to ¼ mile or more and, at where more than one separate attachment or guy is on the same pole. Grounding connectors shall be installed to the overhead communications cable, to the telephone and CATV cables support span wires when present, to the ground wire of a multigrounded system, to the neutral wire of a multigrounded system and to the ground of a secondary circuit. The ground wire between clamps shall be stapled every 12 in.

CATEGORY 800
TRAFFIC

SECTION 806-LUMINAIRES AND LAMPS

575 **DELETE**: The title "806.03 CONSTRUCTION." only.

INSERT: The following.

806.03 CONSTRUCTION. All luminaires that have an access door facing downward, and have the door supporting the weight of all or part of the ballast, shall have a safety cable installed. The safety cable shall be capable of supporting the full weight of the door and ballast, and shall restrict the amount the door may swing open to 90 degrees. The cable shall be attached to the door by spring clips that can be removed without the use of tools, to allow the door to be easily removed.

ADD: The following after 806.03.04 Installation.

806.03.05 Luminaire Photometric Data and Calculations. Photometric data on roadway and pedestrian luminaires shall be submitted with the catalog cut for the luminaire. This data shall include:

(a) Photometric Data. A photometric file for the luminaire selected, in standard I.E.S.N.A. format, on a CD. If more then one file is available on the CD, the name of the file shall be clearly indicated on the catalog cut. Only one CD shall be submitted with the catalog cuts for each luminaire.

(b) Photometric Calculations. Printouts of the predicted lighting levels for the areas indicated in the Contract Documents. If no areas are indicated, the Contractor shall select a typical section of the project for each type of luminaire. A maintenance factor of 0.64 will be assumed for the calculations.

Calculations for roadway luminaires shall show predicted horizontal footcandle values and veiling luminance ratios for the section selected.

Calculations for pedestrian luminaires shall be made for typical section of walkway. If any of the walkway is adjacent to a roadway, the section selected shall be adjacent to the roadway. The printouts shall show predicted horizontal footcandles for the section of walkway selected, and horizontal footcandles and veiling luminance ratios for the roadways adjacent to the walkway. If roadway lighting also illuminates the adjacent walkway, the roadway lighting luminaires shall be included in the calculations.

If the Contractor desires to change luminaire models during the course of the Contract, or the manufacturer changes specifications for the luminaire during the Contract, photometric calculations, and diskette, shall be submitted for each change.

All roadway and pedestrian luminaires shall conform to the following criteria:

(a) Fixed Aim Luminaires. Fixed aim luminaires, such as cobra-head, or post top luminaires, shall have an I.E.S.N.A. Type 3 distribution pattern or as specified in the Contract Documents. The luminous intensity shall not exceed 100 candelas per 1000 lamp lumens for any point 80 degrees, or higher, above nadir.

(b) Adjustable Aim Luminaires. Adjustable aim luminaires, such as floodlights, shall have an I.E.S.N.A. Type 3 distribution pattern or as specified in the Contract Documents. The luminous intensity shall not exceed 100 candelas per 1000 lamp lumens for any point 80 degrees, or higher, above nadir; or exceed 25 candelas per 1000 lamp lumens for any point 90 degrees, or higher above nadir; when the aiming point is nadir.

(c) High Mast Luminaires. High mast luminaires shall have an I.E.S.N.A. Type 4 distribution pattern or as specified in the Contract Documents. The luminous intensity shall not exceed 100 candelas per 1000 lamp lumens for any point 80 degrees, or higher, above nadir; or exceed 25 candelas per 1000 lamp lumens for any point 90 degrees, or higher above nadir.

All calculated lighting levels for roadway lighting shall be not less than the levels specified in the Contract Documents. When no levels are specified in the Contract Documents, the calculated lighting levels shall be not less than those specified in I.E.S.N.A. RP-8-00 American Standard Practice for Roadway Lighting.

All calculated lighting levels on pedestrian walkways lighting shall be not less than the levels specified in the Contract Documents. When no levels are specified, the calculated levels shall conform to I.E.S.N.A. In all cases, the maximum calculated veiling luminance ratios on the traveled roadway adjacent to the walkway shall not exceed 0.4.

Testing Submittal and approval of photometric data and calculations shall not absolve the Contractor of the photometric testing required by Section 820, or the Contractor's responsibility to correct or replace lighting where field measurements do not conform to Administration or I.E.S.N.A. requirements.

806.04 MEASUREMENT AND PAYMENT.

576 **ADD**: The following.

806.04.01 Photometric calculations, and photometric data, will not be measured but the cost will be incidental to other pertinent items included in the Contract Documents.

CATEGORY 800
TRAFFIC

SECTION 810 — ELECTRICAL CABLE, WIRE, AND CONNECTORS

810.02 MATERIALS.

ADD: Cable Duct End Seals shall consist of a one-piece heat shrinkable device designed to provide a waterproof seal around the cable duct and each individual cable. The Cable Duct End Seal shall have separate entranceways for each cable, and shall hold the cables apart when applied.

810.03. CONSTRUCTION.

810.03.03 Preassembled Cable Duct

Delete: The second paragraph beginning "After backfilling…" in it's entirety.

INSERT: The following.

After backfilling the contractor shall demonstrate that the conductors move freely within the duct by pulling the conductors out a minimum of length of 2 ft. Pulling Tension shall conform to 810.03.02. The cable shall be then pulled to it's original position, and the Cable Duct End Seals installed. After installation of the Cable Duct End Seals, but prior to installing connector kits or splices, the electrical circuit testing shall be performed as specified in 820.03.02 (b) and the results recorded. The contractor shall record the length of cable, locations of both ends of the cable duct, and the insulation resistance on a form acceptable to the Engineer, and forward the form to the Engineer.

823.04 MEASUREMENT AND PAYMENT.

810.04.01

ADD: Preassembled Cable Duct that has not had the required electrical tests performed and reported to the engineer will not be measured or paid for.

ADD:

810.04.03 Cable Duct End Seals shall be measured and paid for at the contract unit price per each.

CATEGORY 800
TRAFFIC

SECTION 814—SIGNAL HEADS

814.01 DESCRIPTION.

587 **ADD:** The following after the first paragraph.

This work shall also consist of furnishing and installing Aluminum and Polycarbonate 8-in. and 12-in. vehicle traffic control signal heads and hardware with LED Green, Yellow, and Red indications, as specified in the Contract Documents or as directed by the Engineer. All signal housing shall have a black face and yellow housing.

814.02 MATERIALS.

ADD: The following to the end of the list of materials.

LED Traffic Signal Modules	See Current "LED TRAFFIC SIGNAL MODULES" from OOTS - Traffic Engineering Design Division
ALL Red and Green Traffic Signals (LED or Incandescent)	Shall comply with COMAR 14.26.03 (Certification of compliance with Maryland Energy Efficiency Standards)

814.03 CONSTRUCTION.

ADD: The following after the first paragraph.

Red, Yellow, and Green Signal Heads (LED). Reference the most current Special provision titled "*LED TRAFFIC SIGNAL MODULES*", maintained at the Office of Traffic & Safety - Traffic Engineering Design Division for the construction of red, yellow, and green LED signal heads.

814.04 MEASUREMENT AND PAYMENT.

ADD: The following after the first paragraph.

Aluminum and Polycarbonate LED Signal heads furnished and installed will be measured and paid for at the Contract unit price per each section of signal head type and size as specified in the Contract Documents. The signal heads will have the LED module already fitted into the housing assembly already. The payment will be full compensation for all components necessary for the type of light source (LED), mounting hardware, assembly, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

Self-contained LED signal head modules will be measured and paid for at the contract unit price each. The payment will be full compensation for the LED module, hardware, assembly, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

SECTION 875 UTILITIES STATEMENT

DESCRIPTION. The Contractor's attention is called to the requirements of sections GP-5.05, GP-7.13 and GP-7.17 of the General Provisions for Construction Contracts.

MATERIALS. Not Applicable.

CONSTRCTION.

(a) Attention of the Contractor is directed to the presence of water, sewer, gas, electrical, telecommunication, and television, facilities, poles, cables, conduits, ducts, mains, and house service connections in, over, under or adjacent to the street or highway in which the construction project is to be performed. The Contractor shall exercise special care and extreme caution to protect and avoid damage to utility company facilities as described in the preceding sentence. The Contractor shall take into consideration the adjustments and installations by public utilities in areas within the project limits of this Contract. Existing utilities have been generally located and shown on the plans, as they are believed to exist; however, the Administration assumes no responsibility for the accuracy of these locations.

(b) The contractor shall locate all existing utilities and be responsible for their safety. Should any existing utilities be damaged or destroyed due to the operations or negligence of the Contractor, the damaged or destroyed components shall be immediately replaced or repaired as necessary to restore the utility to a satisfactory operating condition to the complete satisfaction of the affected Utility Agency. The Contractor will be completely responsible for all expenses associated with repairs or replacements to these facilities at no additional expense to the Administration or the owner of the utility. In the event that the respective Utility Agency conducts these repairs, the Contractor will be entirely responsible to furnish the Utility with full payment for the work performed including all costs associated with any service disruptions.

(c) The existing utilities shall be relocated or removed by the agency responsible for their maintenance or by the owner of the utility unless otherwise indicated in the Contract documents. The Contractor shall inform the respective utility companies at least five days prior to working in any area. In addition, the Contractor shall give sufficient notice to the specific utilities of the Contractors overall plan for construction. The utility companies will establish the lead time necessary to meet the applicable utility work schedule and coordinate with the Contractor's work operations based upon the Contractors overall plan.

(d) The following utility companies maintain facilities within the limits of work of this contract:

VERIZON
Mr. Gabor Varsa Telephone: 301-282-7031
3901 Calverton Boulevard
Beltsville, Maryland 20705

Verizon owns both underground and aerial facilities within project limits. Adjustments to surface structures are required to meet asphalt ride specifications. This work will not be measured for payment and is considered incidental to the Hot Mix Asphalt items. Additionally, all work and materials associated with the placement of temporary asphalt to ramp around existing surface structures to maintain traffic after milling and before paving operation will be not be measured for payment and is incidental to appropriate milling items.

Potomac Electric Power Company
Mr. John kormoa Telephone: 202-388-2632
3400 Benning Road Fax: 202-388-2228
Washington, DC 20019

PEPCO owns both underground and aerial facilities within project limits. Adjustments to surface structures are required to meet asphalt ride specifications. This work will not be measured for payment and is considered incidental to the Hot Mix Asphalt items. Additionally, all work and materials associated with the placement of temporary asphalt to ramp around existing surface structures to maintain traffic after milling and before paving operation will be not be measured for payment and is incidental to appropriate milling items.

Comcast
Mr. Bill Becht Telephone: 301-456-8958
11800 Tech Road Fax: 301-499-2678
Silver Spring Maryland 20904

Comcast maintains aerial equipment attached to PEPCO facilities. No relocation of this equipment is required for this contract.

Washington Gas Light Company
Theresa Curtis Telephone: 703-750-4459
6801 Industrial Road Fax: 703-750-7570
Springfield, Virginia 22151

WGL maintains underground facilities within project limits. Adjustments to surface structures are required to meet asphalt ride specifications. This work will not be measured for payment and is considered incidental to the Hot Mix Asphalt items. Additionally, all work and materials associated with the placement of temporary asphalt to ramp around existing surface structures to maintain traffic after milling and before paving operation will be not be measured for payment and is incidental to appropriate milling items.

Washington Suburban Sanitary Commission
Mr. Ahmad Karami Telephone: 301-206-8672
14501 Sweitzer Lane Fax: 301-206-8722
Laurel, Maryland 20707

WSSC maintains underground facilities within project limits. Adjustments to surface structures are required to meet asphalt ride specifications. This work will not be measured for payment and is considered incidental to the Hot Mix Asphalt items. Additionally, all work and materials associated with the placement of temporary asphalt to ramp around existing surface structures to maintain traffic after milling and before paving operation will be not be measured for payment and is incidental to appropriate milling items.

(e) All notifications to the above utility companies and “Miss Utility”, 1-800-257-7777, shall be given 48 hours (two full working days) in advance of working in the area of the specific affected utility. The notification to “Miss Utility” is required whenever any excavating or similar work is performed.

(f) If a utility adjustment or relocation is required, it is necessary that the existing facilities remain continuously in service until the new adjustment or relocation is completed and placed in service. It will be the responsibility of the contractor to remove and dispose of abandoned utility facilities when these facilities are in conflict with proposed construction. The Contractor must obtain authorization from the appropriate utility agency prior to performing any removal of abandoned facilities. The complete cost for removing and disposing of abandoned utility facilities shall be incidental to the appropriate items of work included in the contract.

(g) An updated schedule or CPM reflecting all utility relocations and adjustments must accompany any submittal by the contractor to vary the sequence of work and/or perform

concurrent work in multiple phases differing from the recommended Maintenance of Traffic phasing. The contractor shall be responsible, upon gaining approval, for coordinating utility relocations and adjustments with the affected utility owners, SHA Project Engineer, and District Utility Engineer. All requirements and lead times as stated in the Special Provisions will remain in effect unless written approval from the utility company and the District Utility Engineer is received by the Contractor prior to commencing any requested work.

MEASURMENT AND PAYMENT. All work, or additional work, performed expediting utility relocations, working around, or protecting, utility facilities, and coordinating and cooperating with utility agencies or their contractors will not be measured for payment and considered incidental to the items specified in the Contract Documents.

CATEGORY 900
MATERIALS

665 **DELETE:** SECTION 902 — PORTLAND CEMENT CONCRETE AND RELATED PRODUCTS in its entirety.

INSERT: The following.

SECTION 902 — PORTLAND CEMENT CONCRETE AND RELATED PRODUCTS

902.01 STORAGE. Storage of materials shall conform to the Contract Documents and as directed by the Engineer.

902.02 CERTIFICATION OF PORTLAND CEMENT AND BLENDED HYDRAULIC CEMENT. The manufacturer shall furnish certification as specified in TC-1.02. The certification shall also include:

(a) The mill shall report its quality control procedures, and submit a new report whenever there is a procedural change.

(b) The mill's control laboratory shall be inspected by the Cement and Concrete Reference Laboratory of the National Institute of Standards and Technology on their regularly scheduled visits. The Engineer shall be provided with copies of the reports of these inspections along with an account of the action taken to correct cited deficiencies.

(c) Records of data accumulated by the quality control procedures shall be produced upon request.

(d) A certified document shall accompany each shipment stating that the contents conform to all applicable requirements. Additionally, the document shall show the producer's name, mill location, carrier number, date loaded, weight contained in carrier, silo number, consignee, destination, Contract number, and type of cement. The signature and title of the signer shall be shown on the document.

(e) The mill shall, upon request, supply certified chemical and physical test values that can be associated with any sample representing cement drawn from a particular silo on a given date.

(f) Acceptance of cement by certification will be terminated if test results differ from mill results by more than the precision limits given in the test method. The acceptance procedure will then revert to storage testing and approval prior to shipment.

902.03 HYDRAULIC CEMENT.

902.03.01 Portland Cement. M 85, with the fineness and the time of setting determined using T 153 and T 131, respectively.

902.03.02 Ground Iron Blast Furnace Slag. M 302, Grade 100 or 120. The Contractor may request to substitute a maximum of 50 percent of the weight of cement with ground iron blast furnace slag. When ground iron blast furnace slag is used, the minimum cement factor and water/cement ratio will be determined on the basis of the combined weight of the portland cement and ground iron blast furnace slag. When ground iron blast furnace slag is used to control alkali silica reactivity, see Table 902 B for percentage.

902.04 BLENDED HYDRAULIC CEMENT. M 240, Type I (PM) or a Type IP containing 15 to 25 percent pozzolan by weight of cement. Maximum loss on ignition is 3.0 percent. Do not use ground iron blast furnace slag for blending. The requirement for a manufacturer's written statement of the chemical composition is waived.

902.05 MASONRY CEMENT. C 91, except the water retention and staining tests are waived.

902.06 CONCRETE ADMIXTURES. Do not use concrete admixtures that contribute more than 200 ppm of chlorides based on the cement content when tested per MSMT 610. Use only prequalified admixtures.

Do not use pozzolan and Type I (PM) or Type IP cement in the same mix. Since the strength gains are delayed with these materials, a longer period of time may be required for curing and form removal.

902.06.01 Air Entraining Admixtures. M 154.

902.06.02 Chemical Admixtures. M 194, Type A, D, or nonchloride C.

902.06.03 High Range Water Reducing Admixtures. M 194, except that it shall be a liquid, the water content shall be a maximum of 85 percent of that of the control, and the durability factor shall be a minimum of 90. Use Type F for early strength, which shall produce a minimum compressive strength in 12 hours of 180 percent of that of the control. Use Type G when early strength is not specified. The manufacturer shall furnish certification as specified in TC-1.02. The certification shall include curves indicating the fluid ounces of admixture per 100 lb of cement as related to water reduction and strength gain for 12 hours when used with a minimum cement factor of 700 lb.

902.06.04 Pozzolans. The use of pozzolans may be requested to control alkali silica reactivity or for other reasons. When a pozzolan is used, determine the minimum cement factor and water/cement ratio on the basis of the combined weight cement and pozzolan. See Table 902 B for percentage of fly ash, and microsilica.

(a) Fly Ash. M 295, pozzolan Class C or F, except that the maximum permissible moisture content shall be 1.0 percent, and when used in concrete Mix Nos. 3 and 6 the maximum loss on ignition 3.0 percent.

(b) Microsilica. C 1240, except that the oversize requirement is waived.

902.06.05 Corrosion Inhibitors. Corrosion inhibitors shall be calcium nitrite based and contain a minimum of 30 percent active ingredients by mass. The gallonage of corrosion inhibitor used in the concrete mixture shall be included as water when determining the water/cementitious materials ratio.

902.07 PORTLAND CEMENT CONCRETE CURING MATERIALS. Use burlap cloth, sheet materials, liquid membrane forming compounds, or cotton mats.

902.07.01 Burlap. M 182, Class 1, 2, or 3.

902.07.02 Sheet Materials. M 171 with the following exceptions:

(a) White Opaque Burlap Polyethylene Sheeting. Tensile strength and elongation requirements are waived. Use sheeting having a finished product weight of not less than 10 oz/yd^2.

(b) White Opaque Polyethylene Backed Nonwoven Fabric. 902.07.02(a), with the thickness requirement waived. Use material having a finished product weight of not less than 5 oz/yd^2.

(c) White Opaque Polyethylene Film. Tensile strength and elongation requirements are waived.

902.07.03 Liquid Membrane. M 148. Field control testing of the white pigmented curing compounds is on the basis of weight per gallon. The samples shall not deviate more than ± 0.3 lb/gal from the original source sample.

902.07.04 Cotton Mats. Cotton mats consist of a filling material of cotton bats or bats covered with unsized cloth and tufted or stitched to maintain the shape and stability of the unit under job conditions of handling.

Use coverings of either cotton cloth, burlap or jute having the following properties:

(a) Cotton cloth covering shall weigh not less than 6.0 oz/yd^2 and have an average of not less than 32 threads/in. of warp and not less than 28 threads/in. of filling. Use raw cotton, cotton comber waste, cotton card strip waste, or combinations thereof as the raw material used in the manufacture of the cotton cloth.

(b) Burlap or jute covering for cotton mats shall weigh not less than 6.4 oz/yd^2 and shall have not less than of 8 threads/in. of warp and not less than 8 threads/in. of filling. Use the grade known commercially as "firsts" and they shall be free from avoidable imperfections in manufacture and from defects or blemishes affecting the serviceability.

Use a cotton bat, or bats made of raw cotton, cotton waste, cotton linters, or combinations thereof, as the filling material for the mats. Mats shall weigh not less than 12 oz/yd^2.

902.08 FORM RELEASE COMPOUNDS. Use form release compounds that effectively prevent the bond of the concrete to the forms. Form release compounds shall not cause discoloration of the concrete or adversely affect the quality or rate of hardening at the interface of the forms.

The flash point of the form release compound shall not be less than 100 F when tested per T 73.

902.09 PARAFFIN WAX. Use clear paraffin wax for use as a bond breaker for concrete. The flash point shall not be less than 380 F when tested under D 92.

902.10 PORTLAND CEMENT CONCRETE. Section 915 and as specified herein.

902.10.01 Proportioning. Prior to the start of construction, submit to the AME the source and proportions of materials to be used for each concrete mix. The mixture shall meet 902.10.03.

The concrete, with the exception of water and chemical admixtures, shall be proportioned by weight. Water and chemical admixtures may be proportioned by volume or weight. The mix shall be uniform and workable.

902.10.02 Materials.

Coarse Aggregate	901.01
Fine Aggregate	901.01
Cement	902.03 and 902.04
Concrete Admixtures	902.06
Synthetic Fibers	902.15
Water	921.01

902.10.03 Portland Cement Concrete Mixtures.

The concrete mixes shall conform to the following:

TABLE 902 A

PORTLAND CEMENT CONCRETE MIXTURES									
MIX NO.	28 DAY SPECIFIED COMPRESSIVE STRENGTH psi	STANDARD DEVIATION psi	CRITICAL VALUE psi	MIN CEMENT FACTOR lb/yd^3	COARSE AGGREGATE SIZE M 43 / M 195	MAX WATER/ CEMENT RATIO by wt	SLUMP RANGE in.	TOTAL AIR CONTENT %	CONCRETE TEMPERATURE F
1	2500	375	2430	455	57, 67	0.55	2 — 5	5 — 8	70 ± 20
2	3000	450	3010	530	57, 67	0.50	2 — 5	5 — 8	70 ± 20
3	3500	525	3600	580	57, 67	0.50	2 — 5	5 — 8	70 ± 20
4	3500	525	3600	615	57, 67	0.55	4 — 8	N/A	70 ± 20
5	3500	525	3600	580	7	0.50	2 — 5	5 — 8	70 ± 20
6	4500	675	4770	615	57, 67	0.45	2 — 5	5 — 8	65 ± 15
7	4200	630	4420	580	57	0.50	1½ — 3	5 — 8	70 ± 20
8	4000	600	4180	750	7	0.42	2 — 5	5 — 8	65 ± 15
9	3000 (a)	N/A	N/A	800	57, 67	0.45	4 — 8	5 — 8	70 ± 20
10	4500	675	4770	700	¾" – No. 4	0.45	2 — 5	6 — 9	65 ± 15
11	4200	630	4420	—	57, 67	0.45	2 — 5	5 — 8	65 ± 15
12	4200	630	4420	—	¾" – No. 4	0.45	2 — 5	6 — 9	65 ± 15

Note 1: When concrete is exposed to water exceeding 15,000 ppm sodium chloride content, Type II cement shall be used. In lieu ofType II cement, a Type I cement may be used in combined form with an amount of up to 50 percent replacement with ground iron blast furnace slag, or an amount of up to 25 percent replacement with Class F fly ash. The Contractor shall submit to the Engineer the proposed mix proportions and satisfactory test results per C 1012 showing a sulfate resistance expansion not exceeding 0.10 percent at 180 days

Note 2: The temperature of Mix No. 6 when used for other than superstructure work as defined in TC-1.02 shall be 70 ± 20 F.

Note 3: Type A or D admixture shall be added to bridge, box culvert, and retaining wall concrete.

Note 4: Nonchloride Type C admixtures may be used when approved by the Engineer.

Note 5: Other Slump Requirements:
When a high range water reducing admixture Type F or Type G is specified, the slump shall be 4 to 8 in.
When synthetic fibers are specified, the slump shall be 5 in. maximum.
When concrete is to be placed by the slip form method, the slump shall be 2-1/2 in. maximum.
When the absorption of the coarse aggregate is greater than 10 percent, the slump shall be 3 in. maximum.

Note 6: Mix 9 shall contain a Type F high range water reducing admixture.

Note 7: Mix 10 and 12 shall be proportioned as specified in 211.2 of the ACI's Recommended Practices for Selection Proportions for. Structural Lightweight Concrete. The maximum average Density of Cured Concrete shall be 118 lb/ft^3. Control testing for Density of Cured Concrete shall be two companion cylinders for each 100 yd^3, or fraction thereof, as specified in M 195.

Note 8: Mix 11 and 12 shall also conform to all requirements as specified in Table 902 C.
(a) Acceptance will be based on a minimum compressive strength of 3000 psi in 24 hours. Design approval will be given based on trial batch obtaining a minimum compressive strength of 2500 psi in 12 hours. Testing shall conform to 902.10.08 except that cylinders shall remain in the molds until tests are conducted.

Coarse and fine aggregate having an expansion up to 0.10 percent when tested for alkali silica reactivity (ASR) MSMT 212 may be used without restriction. Aggregates having an expansion greater than 0.10 but less than 0.35 percent are considered reactive and may only be used when one of the options in table 902 B are employed. Those having an expansion of 0.35 percent and greater are prohibited.

TABLE 902 B

OPTION	ALKALI CONTENT OF CEMENT % max	REPLACE CEMENT WITH		SPECIFICATION
		MATERIAL	% BY WEIGHT	
1	1.50	Class F Fly Ash	15 – 25	M 295
2	1.50	Ground Iron Blast Furnace Slag	25 – 50	M 302 Grade 100 or 120
3	1.50	Microsilica	5 – 7	C 1240
4	—	Blended Cement (a)	100	M 240
5	0.60 (b)	Low Alkali Cement	100	M 85

(a) Pozzolan content of 15 – 25 percent by weight of cement
(b) For mix 9 used for Portland cement concrete pavement repairs; the maximum allowable percentage of alkalies in Portland cement shall be 0.70.

When reactive aggregate is used, designate which option will be used to control the formation of the ASR gel. If an option other than option 5 in Table 902 B above is chosen, conduct tests per MSMT 212 using the reactive aggregate and the proposed cementitious material. The expansion test results shall not be greater than 0.10 percent. When more than one reactive aggregate is used in a concrete mix, each shall be tested individually and the maximum amount of pozzolan required to reduce the expansion of all the aggregates to 0.10 percent or less shall be used. Submit the aggregate source, test results, and the percent and type of replacement cement to the Engineer. The Engineer may withhold source approval pending verification testing.

TABLE 902 C

MIX PHYSICAL PROPERTIES		
TEST PROPERTY	**TEST METHOD**	**SPECIFICATION LIMITS**
Minimum Cementitious Materials Factor, lb/yd^3	—	580
Maximum Content of Portland Cement, lb/yd^3	—	550
Water/Cementitious Materials Ratio by Wt.	—	0.45
Corrosion Inhibitor, gal/yd^3	902.06.05	2.0
Synthetic Fibers, lb/yd^3	902.15	1.5
Permeability of Field Concrete, moving average of three tests, coulombs max	T 277 Modified	2500
Permeability of Field Concrete, individual test, coulombs max	T 277 Modified	3000
Shrinkage at 28 days, microstrains	C 157	400

Note 1: Only Type I or II Portland cement shall be used.

Note 2: Mixes shall contain ground iron blast furnace slag, fly ash or microsilica.

Note 3: The water to cement ratio shall be based upon the total water to cementitious materials ratio. The gallonage of the corrosion inhibitor shall be included in the water/cementitious materials ratio.

Note 4: The permeability test value of field concrete shall be the average of two test specimens representing production concrete. Test specimens shall be molded on the project site in 4 x 8 in. molds conforming to M 205. Test specimens shall be handled under same conditions as compressive strength test specimens in conformance with C 31 for the first seven days. When seven days old, they shall be cured in a 100 F water bath for the remainder of the 28 day curing. The 28 day rapid chloride permeability of the specimens will be determined in conformance with T 277. Test for the geometry of test specimens will be waived.

Note 5: Shrinkage tests will be performed on trial mixes only.

Note 6: High range water reducing admixture may be used except the water reducing requirements will be waived.

Note 7: A sealer conforming to 902.12 shall be used on the finished surface.

902.10.04 Trial Batch. A trial batch shall be prepared to certify that each mix meets 902.10.05 and 902.10.06. Approval will be given when the test results meets the minimum required average strength.

Make arrangements with the AME at least two weeks in advance, to have an authorized representative present during the batching and testing. Each trial batch shall consist of at least 3 yd^3 of concrete. Supply all equipment, and labor required to produce the trial batches and conduct the required tests at no additional cost to the Administration.

The AME may waive the requirement for a trial batch when past performance records show that the required average strength requirement has been met.

902.10.05 Design Required Average Strength.

Specified compressive strength, f_c', psi	Required average compressive strength, f_{cr}', psi
$f_c' \leq 5000$	Use the larger value computed from Eq. (A-1) and (A-2) $f_{cr}' = f_c' + 1.34s$ (A-1) $f_{cr}' = f_c' + 2.33s - 500$ (A-2)
Over 5000	Use the larger value computed from Eq. (A-1) and (A-3) $f_{cr}' = f_c' + 1.34s$ (A-1) $f_{cr}' = 0.90 f_c' + 2.33s$ (A-3)

where:

f_c' = the 28 day specified compressive strength.
s = the standard deviation as specified in 902.10.06.

A test is defined as the average strength of two companion cylinders.

902.10.06 Standard Deviation.

(a) When past performance records are available, a standard deviation will be established from documented performance records of the producer consisting of a minimum of 15 consecutive 28 day compressive strength tests obtained within the last 12 months.

The standard deviation will be established as the product of the calculated standard deviation and multiplier.

NUMBER OF TESTS	MULTIPLIER FOR STANDARD DEVIATION
15	1.16
20	1.08
25	1.03
30 or more	1.00

Interpolate for intermediate number of tests.

(b) When past performance records are not available, the required average strength shall meet to the following:

Specified compressive strength, f_c', psi	Required average compressive strength, f_{cr}', psi
$f_c' < 3000$	$f_{cr}' = f_c' + 1000$
$3000 \leq f_c' \leq 5000$	$f_{cr}' = f_c' + 1200$
$f_c' > 5000$	$f_{cr}' = 1.10\, f_c' + 700$

902.10.07 Standard of Control. The average of all sets of three consecutive strength tests shall equal or exceed the critical value as specified in 902.10.03 which shall be computed using the following formula:

$$\text{Critical Value} = fc' + (1.14 \text{ X } S) - 500$$

Failure to conform to this criteria shall be cause for immediate investigation and remedial action up to and including suspension of production. A design standard deviation equal to 15 percent of the specified strength shall be used for calculation until a minimum of 15 test results are obtained.

The actual average strength and standard deviation shall be computed upon the availability of 28 day strength data comprising a minimum of 15 tests. Should this determination indicate an excessive margin of safety, the concrete mix may be modified to produce lower average strength as approved by the Engineer. If these calculations indicate a coefficient of variation greater than 15, the quality of the concrete and testing will be evaluated.

902.10.08 Testing. Sampling per T 141. Testing as follows:

TEST	METHOD	MINIMUM TEST FREQUENCY	RESPONSIBILITY
Temperature (e)	T 309	1 per 50 yd^3 (or fraction thereof)	Project Engineer
Slump (a)(e)	T 119	1 per 50 yd^3 (or fraction thereof)	Project Engineer
Air Content (a)(e)	T 152 T 196	1 per 50 yd^3 (or fraction thereof)	Project Engineer
Compression (b)(c)(d)	T 23	1 per 50 yd^3 (or fraction thereof)	Project Engineer
Compression (b)(c)(d) Mix No. 7 Only	T 23	3 per Day	Project Engineer

(a) A second test will be made when the first slump or air content test fails. Acceptance or rejection will be based on the results of the second test.
(b) Compressive strength tests are defined as the average of two companion cylinders.
(c) The Contractor shall be responsible for the making of all early break cylinders and furnishing the molds, stripping, curing/delivery of all cylinders, including 28 day cylinders, to the testing laboratory.
(d) The Project Engineer will be responsible for making, numbering and signing the 28 day cylinders.
(e) When constructing plain and reinforced concrete pavements, the testing frequency for slump, air content, and temperature shall be 1 per 100 yd^3 or fraction thereof.

902.10.09 Acceptance. Concrete will be acceptable if both of the following requirements are met:

(a) The average of all sets of three consecutive strength tests equal or exceed the specified design strength.

(b) No individual strength test (average of two companion cylinders) falls below the specified design strength by more than 500 psi.

902.10.10 Price Adjustment. A price adjustment will be based on the Contract unit price per cubic yard of concrete. If the unit is a lump sum item, the price per cubic yard for the concrete will be determined by dividing the cubic yards into the Contract lump sum price.

(a) Test Results More Than 500 psi Below the Specified Design Strength. Failing strength tests will be considered individually with a price adjustment being applied on the percentage basis as shown below.

(Price per yd^3) X (quantity of yd^3 represented by the failing concrete strength) X (percent of failure).

Example:

$400.00 per yd^3 X 50 yd^3 X [1-(3600/ 4500 psi)] = $4,000.00

No payment will be allowed when the test results fall below 50 percent of the specified design strength for structural concrete or 40 percent for incidental concrete.

The Engineer will determine when the strength of the concrete represented by the failing tests is sufficient to remain in place or whether it must be removed and replaced with Specification concrete.

(a) Test Results 500 psi or Less than the Specified Design Strength. Strength failures 500 psi or less than the specified design strength will be averaged with the next two consecutive tests. If those two tests include a failure greater than 500 psi, those tests will be evaluated as in 902.10.10(a) and replaced with the next consecutive test. If the resulting average falls below the specified design strength, a price adjustment will be applied as specified in the table below. Any failure will only be included in one grouping.

STRENGTH BELOW THE SPECIFIED (avg of 3 tests) DESIGN LEVEL, psi	**ADJUSTMENT FACTOR**
MIX NO. 1 THRU MIX NO. 7	
1 – 100	0.005
101 – 200	0.01
201 – 300	0.02
301 – 400	0.04
401 – 500	0.08

Adjustment price equals (price per yd^3) X (quantity of yd^3 represented by the failing cylinders) X (the adjustment factor).

Example:

$400.00 per yd^3 X 50 yd^3 X 0.01 = $200.00

902.11 MORTAR FOR GROUT. Mortar used for grouting anchor bolts, pipe, handrail posts, and miscellaneous items shall be composed in accordance with one of the following:

(a) One part Portland cement or blended hydraulic cement and one part mortar sand by dry loose volume.

(b) Prepared bag mixes consisting of Portland cement or blended hydraulic cement and mortar sand. The prepared mixes shall produce a mortar meeting the strength requirements specified in the Contract Documents.

(c) Use nonshrink grout when specified. The grout shall have a minimum compressive strength of 5000 psi in seven days when tested as specified per T 106, except that the cube molds shall remain intact with a top firmly attached throughout the curing period. The nonshrink grout shall have a minimum expansion of 0.0 percent after seven days when tested as specified per T 160.

(d) Epoxy grout shall consist of sand and epoxy mixed by volume in per the manufacturer's recommendations. The grout shall be capable of developing a minimum compressive strength of 6500 psi in 72 hours when tested per MSMT 501. Sand for epoxy grout as specified in 901.01.

(e) An epoxy or polyester anchoring system may be used when approved by the Engineer in accordance with the manufacturer's recommendations. Strength values shall be as specified in the Contract Documents.

902.12 LINSEED OIL. Shall consist of a 50-50 mixture (by volume) of boiled linseed oil meeting Federal Specification TT-L-190 and kerosene per D 3699.

902.13 LATEX MODIFIED CONCRETE. Portland cement concrete containing prequalified Laboratory approved styrene butadiene latex emulsion is defined as Latex Modified Concrete (LMC).

Latex emulsion shall have a minimum of 90 percent of the nonvolatiles as styrene butadiene polymers. The latex emulsion as specified in Table 902.13 A. The material shall be stored in suitable containers and be protected from freezing and exposure to temperatures in excess of 85 F.

LMC shall be proportioned using volumetric mixing and designed as follows:

LATEX MODIFIED CONCRETE	
MATERIAL	**SPECIFICATION LIMITS**
Portland Cement, CWT/yd^3, min	6.6
Latex Emulsion/Cement Ratio	0.31 – 0.34
Water/Cement Ratio, max	0.22
Entrained Air, %	6.0 ± 3
Slump, in.	5 ± 1

The physical properties of LMC shall conform to Table 902.13 B. The Contractor shall furnish the necessary 3 X 6 in. molds per M 205 to be used for the fabrication of compressive strength cylinders.

Control and Acceptance Sampling.

(a) Submit a two qt minimum sample, of the styrene butadiene latex emulsion to the AME daily for each lot of material used in a day's production.

(b) A batch for LMC is defined as the capacity of the equipment being used on the project. Slump and air samples will be taken and tested before the placement of a batch is permitted. The slump shall be measured four to five minutes after discharge from the mixer. The test material shall be deposited off the deck and not be disturbed during this

waiting period. One additional sample for slump and air will be taken randomly during the placement of each batch. For seven day compressive strength, two tests each per batch are required. A test is defined as consisting of two companion cylinders. The samples for these tests will be taken at random while the placement is in progress.

TABLE 902.13 A

REQUIREMENTS FOR CHEMICAL PROPERTIES OF LATEX EMULSION MATERIALS

PROPERTY	SPECIFICATIONS		QUALITY ASSURANCE TESTS	
	LIMITS	TOLERANCE	PREQUALIFICATION TESTS	CONTROL AND ACCEPTANCE
Color	White	—	X	X
pH	9.0 – 11.0	—	X	X
Weight, lb/gal	8.40 – 8.47	—	X	X
Solids Content, %	46 – 53	—	X	X
*Butadiene Content, % of polymer	30 – 40	—	—	—
Viscosity @ 10 rpm-cps	Match Original	± 20	X	X
*Surface Tension, dynes/cm max	50	—	—	—
*Mean Particle Size, polymer – Å	1400 – 2500	—	—	—
Coagulum, % max	0.10	—	X	X
*Freeze-Thaw Stability, coagulum, % max	0.10	—	X	X
Infrared Spectra of Latex Film	Match Original	—	X	X
Infrared of Alcohol, Soluble Portion of Latex	Match Original	—	X	X
Shelf Life, min	1 yr	—	X	—

Note 1: Quality assurance tests shall be conducted as specified in MSMT 612 except those denoted by an * shall be conducted as specified in FHWA RD – 78-35.

Note 2: The original or prequalification sample shall be accompanied by the producer's certification on all of the tests and properties noted above and as specified in TC-1.02. The certification shall contain actual test values of the product and the infrared spectrograph.

Note 3: A separate certification is required for each lot of material. The certification shall note the date of manufacture, lot size, and whether or not the material is identical to the formulation of the original sample.

TABLE 902.13 B

LATEX MODIFIED CONCRETE PHYSICAL PROPERTIES			
TEST PROPERTY	**TEST VALUES**	**QUALITY ASSURANCE TESTS**	
		PREQUALIFIED TESTS	**CONTROL AND ACCEPTANCE**
7 Day Compressive Strength, psi min	3000	X	X
28 Day Compressive Strength, psi min	3500	X	—
42 Day Compressive Strength, psi min	3500	X	—
7 Day Flexural Strength, psi min	550	X	—
28 Day Flexural Strength, psi min	650	X	—
42 Day Shear Bond Strength, psi min	2000	X	—
Durability Factor, 300 cycles, % min	85	X	—
Chloride Permeability, Ppm max	510	X	—
Scaling Resistance, 50 cycles, max	3	X	—

Note 1: Quality assurance tests shall be conducted as specified in MSMT 721.

Note 2: Seven Day Compressive Strength Test will be used for Control & Acceptance of the material. The minimum specified design strength is 3000 psi at seven days. The mix design approval and acceptance will be based on a coefficient of variation of 10 percent with a probability of 1 in 10 tests falling below the specified strength. Only test values 80% or greater than the specified strength will be accepted

902.14 RAPID HARDENING CEMENTITIOUS MATERIALS FOR CONCRETE PAVEMENT REPAIRS. Materials shall be a dry, packaged cementitious mortar having less than 5 percent by weight of aggregate retained on the 3/8 in. sieve and meet the following requirements:

Classification.

Class I — For use at ambient temperatures below 50 F.
Class II — For use at ambient temperatures of 50 to 90 F.
Class III — For use at ambient temperatures above 90 F.

Chemical Requirements. C 928 except that no organic compounds such as epoxy resins or polyesters as the principal binder.

Physical Requirements. Meet the following when tested per MSMT 725:

COMPRESSIVE STRENGTH, psi min				
CLASSIFICATION	**< 2 hr**	**2-6 hr**	**6 hr**	**28 days**
Type I — Slow	—	—	2000	4500
Type II — Rapid	—	2000	—	4500
Type III — Very Rapid	2500	—	—	4500

TEST RESULTS	
TEST PROPERTY	**LIMITS**
Bond Strength, 7 days, psi min	2000
Length Change, increase after 28 days in water, based on length at 3 hr, % max	+ 0.15
Length Change, decrease after 28 days, % max	- 0.15
Freeze Thaw, loss after 25 cycles in 10% $CaCl_2$ solution, % max	8
Initial Setting Time, minutes min	10

Marking. All packages delivered to the project shall be marked with the following information:

(a) Date material was packaged.

(b) Approximate setting time.

(c) Recommended dosage of water or liquid component.

(d) Mixing instructions.

(e) Class or temperature range.

Certification. The manufacturer shall furnish certification as specified in TC-1.02 showing the actual test results for each class and type of material submitted to the Laboratory.

902.15 SYNTHETIC FIBERS. When synthetic fibers are specified in the Contract Documents, the fibers shall be 1/2 to 1-1/2 in. long and conform to C 1116, Type III. The manufacturer shall furnish certification as specified in TC-1.02. The quantity of fibers used and their point of introduction into the mix shall conform to the fiber manufacturer's recommendations.

CATEGORY 900
MATERIALS

665 **DELETE:** SECTION 902 — PORTLAND CEMENT CONCRETE AND RELATED PRODUCTS in its entirety.

INSERT: The following.

SECTION 902 — PORTLAND CEMENT CONCRETE AND RELATED PRODUCTS

902.01 STORAGE. Storage of materials shall conform to the Contract Documents and as directed by the Engineer.

902.02 CERTIFICATION OF PORTLAND CEMENT AND BLENDED HYDRAULIC CEMENT. The manufacturer shall furnish certification as specified in TC-1.02. The certification shall also include:

(a) The mill shall report its quality control procedures, and submit a new report whenever there is a procedural change.

(b) The mill's control laboratory shall be inspected by the Cement and Concrete Reference Laboratory of the National Institute of Standards and Technology on their regularly scheduled visits. The Engineer shall be provided with copies of the reports of these inspections along with an account of the action taken to correct cited deficiencies.

(c) Records of data accumulated by the quality control procedures shall be produced upon request.

(d) A certified document shall accompany each shipment stating that the contents conform to all applicable requirements. Additionally, the document shall show the producer's name, mill location, carrier number, date loaded, weight contained in carrier, silo number, consignee, destination, Contract number, and type of cement. The signature and title of the signer shall be shown on the document.

(e) The mill shall, upon request, supply certified chemical and physical test values that can be associated with any sample representing cement drawn from a particular silo on a given date.

(f) Acceptance of cement by certification will be terminated if test results differ from mill results by more than the precision limits given in the test method. The acceptance procedure will then revert to storage testing and approval prior to shipment.

902.03 HYDRAULIC CEMENT.

902.03.01 Portland Cement. M 85, with the fineness and the time of setting determined using T 153 and T 131, respectively.

902.03.02 Ground Iron Blast Furnace Slag. M 302, Grade 100 or 120. The Contractor may request to substitute a maximum of 50 percent of the weight of cement with ground iron blast furnace slag. When ground iron blast furnace slag is used, the minimum cement factor and water/cement ratio will be determined on the basis of the combined weight of the portland cement and ground iron blast furnace slag. When ground iron blast furnace slag is used to control alkali silica reactivity, see Table 902 B for percentage.

902.04 BLENDED HYDRAULIC CEMENT. M 240, Type I (PM) or a Type IP containing 15 to 25 percent pozzolan by weight of cement. Maximum loss on ignition is 3.0 percent. Do not use ground iron blast furnace slag for blending. The requirement for a manufacturer's written statement of the chemical composition is waived.

902.05 MASONRY CEMENT. C 91, except the water retention and staining tests are waived.

902.06 CONCRETE ADMIXTURES. Do not use concrete admixtures that contribute more than 200 ppm of chlorides based on the cement content when tested per MSMT 610. Use only prequalified admixtures.

Do not use pozzolan and Type I (PM) or Type IP cement in the same mix. Since the strength gains are delayed with these materials, a longer period of time may be required for curing and form removal.

902.06.01 Air Entraining Admixtures. M 154.

902.06.02 Chemical Admixtures. M 194, Type A, D, or nonchloride C.

902.06.03 High Range Water Reducing Admixtures. M 194, except that it shall be a liquid, the water content shall be a maximum of 85 percent of that of the control, and the durability factor shall be a minimum of 90. Use Type F for early strength, which shall produce a minimum compressive strength in 12 hours of 180 percent of that of the control. Use Type G when early strength is not specified. The manufacturer shall furnish certification as specified in TC-1.02. The certification shall include curves indicating the fluid ounces of admixture per 100 lb of cement as related to water reduction and strength gain for 12 hours when used with a minimum cement factor of 700 lb.

902.06.04 Pozzolans. The use of pozzolans may be requested to control alkali silica reactivity or for other reasons. When a pozzolan is used, determine the minimum cement factor and water/cement ratio on the basis of the combined weight cement and pozzolan. See Table 902 B for percentage of fly ash, and microsilica.

(a) Fly Ash. M 295, pozzolan Class C or F, except that the maximum permissible moisture content shall be 1.0 percent, and when used in concrete Mix Nos. 3 and 6 the maximum loss on ignition 3.0 percent.

(b) Microsilica. C 1240, except that the oversize requirement is waived.

902.06.05 Corrosion Inhibitors. Corrosion inhibitors shall be calcium nitrite based and contain a minimum of 30 percent active ingredients by mass. The gallonage of corrosion inhibitor used in the concrete mixture shall be included as water when determining the water/cementitious materials ratio.

902.07 PORTLAND CEMENT CONCRETE CURING MATERIALS. Use burlap cloth, sheet materials, liquid membrane forming compounds, or cotton mats.

902.07.01 Burlap. M 182, Class 1, 2, or 3.

902.07.02 Sheet Materials. M 171 with the following exceptions:

(a) White Opaque Burlap Polyethylene Sheeting. Tensile strength and elongation requirements are waived. Use sheeting having a finished product weight of not less than 10 oz/yd^2.

(b) White Opaque Polyethylene Backed Nonwoven Fabric. 902.07.02(a), with the thickness requirement waived. Use material having a finished product weight of not less than 5 oz/yd^2.

(c) White Opaque Polyethylene Film. Tensile strength and elongation requirements are waived.

902.07.03 Liquid Membrane. M 148. Field control testing of the white pigmented curing compounds is on the basis of weight per gallon. The samples shall not deviate more than ± 0.3 lb/gal from the original source sample.

902.07.04 Cotton Mats. Cotton mats consist of a filling material of cotton bats or bats covered with unsized cloth and tufted or stitched to maintain the shape and stability of the unit under job conditions of handling.

Use coverings of either cotton cloth, burlap or jute having the following properties:

(a) Cotton cloth covering shall weigh not less than 6.0 oz/yd^2 and have an average of not less than 32 threads/in. of warp and not less than 28 threads/in. of filling. Use raw cotton, cotton comber waste, cotton card strip waste, or combinations thereof as the raw material used in the manufacture of the cotton cloth.

(b) Burlap or jute covering for cotton mats shall weigh not less than 6.4 oz/yd^2 and shall have not less than of 8 threads/in. of warp and not less than 8 threads/in. of filling. Use the grade known commercially as "firsts" and they shall be free from avoidable imperfections in manufacture and from defects or blemishes affecting the serviceability.

Use a cotton bat, or bats made of raw cotton, cotton waste, cotton linters, or combinations thereof, as the filling material for the mats. Mats shall weigh not less than 12 oz/yd^2.

902.08 FORM RELEASE COMPOUNDS. Use form release compounds that effectively prevent the bond of the concrete to the forms. Form release compounds shall not cause discoloration of the concrete or adversely affect the quality or rate of hardening at the interface of the forms.

The flash point of the form release compound shall not be less than 100 F when tested per T 73.

902.09 PARAFFIN WAX. Use clear paraffin wax for use as a bond breaker for concrete. The flash point shall not be less than 380 F when tested under D 92.

902.10 PORTLAND CEMENT CONCRETE. Section 915 and as specified herein.

902.10.01 Proportioning. Prior to the start of construction, submit to the AME the source and proportions of materials to be used for each concrete mix. The mixture shall meet 902.10.03.

The concrete, with the exception of water and chemical admixtures, shall be proportioned by weight. Water and chemical admixtures may be proportioned by volume or weight. The mix shall be uniform and workable.

902.10.02 Materials.

Coarse Aggregate	901.01
Fine Aggregate	901.01
Cement	902.03 and 902.04
Concrete Admixtures	902.06
Synthetic Fibers	902.15
Water	921.01

902.10.03 Portland Cement Concrete Mixtures.

The concrete mixes shall conform to the following:

TABLE 902 A

PORTLAND CEMENT CONCRETE MIXTURES									
MIX NO.	28 DAY SPECIFIED COMPRESSIVE STRENGTH psi	STANDARD DEVIATION psi	CRITICAL VALUE psi	MIN CEMENT FACTOR lb/yd^3	COARSE AGGREGATE SIZE M 43 / M 195	MAX WATER/ CEMENT RATIO by wt	SLUMP RANGE in.	TOTAL AIR CONTENT %	CONCRETE TEMPERATURE F
1	2500	375	2430	455	57, 67	0.55	2 — 5	5 — 8	70 ± 20
2	3000	450	3010	530	57, 67	0.50	2 — 5	5 — 8	70 ± 20
3	3500	525	3600	580	57, 67	0.50	2 — 5	5 — 8	70 ± 20
4	3500	525	3600	615	57, 67	0.55	4 — 8	N/A	70 ± 20
5	3500	525	3600	580	7	0.50	2 — 5	5 — 8	70 ± 20
6	4500	675	4770	615	57, 67	0.45	2 — 5	5 — 8	65 ± 15
7	4200	630	4420	580	57	0.50	1½ — 3	5 — 8	70 ± 20
8	4000	600	4180	750	7	0.42	2 — 5	5 — 8	65 ± 15
9	3000 (a)	N/A	N/A	800	57, 67	0.45	4 — 8	5 — 8	70 ± 20
10	4500	675	4770	700	¾" – No. 4	0.45	2 — 5	6 — 9	65 ± 15
11	4200	630	4420	—	57, 67	0.45	2 — 5	5 — 8	65 ± 15
12	4200	630	4420	—	¾" – No. 4	0.45	2 — 5	6 — 9	65 ± 15

Note 1: When concrete is exposed to water exceeding 15,000 ppm sodium chloride content, Type II cement shall be used. In lieu ofType II cement, a Type I cement may be used in combined form with an amount of up to 50 percent replacement with ground iron blast furnace slag, or an amount of up to 25 percent replacement with Class F fly ash. The Contractor shall submit to the Engineer the proposed mix proportions and satisfactory test results per C 1012 showing a sulfate resistance expansion not exceeding 0.10 percent at 180 days

Note 2: The temperature of Mix No. 6 when used for other than superstructure work as defined in TC-1.02 shall be 70 ± 20 F.

Note 3: Type A or D admixture shall be added to bridge, box culvert, and retaining wall concrete.

Note 4: Nonchloride Type C admixtures may be used when approved by the Engineer.

Note 5: Other Slump Requirements:
When a high range water reducing admixture Type F or Type G is specified, the slump shall be 4 to 8 in.
When synthetic fibers are specified, the slump shall be 5 in. maximum.
When concrete is to be placed by the slip form method, the slump shall be 2-1/2 in. maximum.
When the absorption of the coarse aggregate is greater than 10 percent, the slump shall be 3 in. maximum.

Note 6: Mix 9 shall contain a Type F high range water reducing admixture.

Note 7: Mix 10 and 12 shall be proportioned as specified in 211.2 of the ACI's Recommended Practices for Selection Proportions for. Structural Lightweight Concrete. The maximum average Density of Cured Concrete shall be 118 lb/ft^3. Control testing for Density of Cured Concrete shall be two companion cylinders for each 100 yd^3, or fraction thereof, as specified in M 195.

Note 8: Mix 11 and 12 shall also conform to all requirements as specified in Table 902 C.
(a) Acceptance will be based on a minimum compressive strength of 3000 psi in 24 hours. Design approval will be given based on trial batch obtaining a minimum compressive strength of 2500 psi in 12 hours. Testing shall conform to 902.10.08 except that cylinders shall remain in the molds until tests are conducted.

Coarse and fine aggregate having an expansion up to 0.10 percent when tested for alkali silica reactivity (ASR) MSMT 212 may be used without restriction. Aggregates having an expansion greater than 0.10 but less than 0.35 percent are considered reactive and may only be used when one of the options in table 902 B are employed. Those having an expansion of 0.35 percent and greater are prohibited.

TABLE 902 B

OPTION	ALKALI CONTENT OF CEMENT % max	REPLACE CEMENT WITH		SPECIFICATION
		MATERIAL	% BY WEIGHT	
1	1.50	Class F Fly Ash	15 – 25	M 295
2	1.50	Ground Iron Blast Furnace Slag	25 – 50	M 302 Grade 100 or 120
3	1.50	Microsilica	5 – 7	C 1240
4	—	Blended Cement (a)	100	M 240
5	0.60 (b)	Low Alkali Cement	100	M 85

(a) Pozzolan content of 15 – 25 percent by weight of cement
(b) For mix 9 used for Portland cement concrete pavement repairs; the maximum allowable percentage of alkalies in Portland cement shall be 0.70.

When reactive aggregate is used, designate which option will be used to control the formation of the ASR gel. If an option other than option 5 in Table 902 B above is chosen, conduct tests per MSMT 212 using the reactive aggregate and the proposed cementitious material. The expansion test results shall not be greater than 0.10 percent. When more than one reactive aggregate is used in a concrete mix, each shall be tested individually and the maximum amount of pozzolan required to reduce the expansion of all the aggregates to 0.10 percent or less shall be used. Submit the aggregate source, test results, and the percent and type of replacement cement to the Engineer. The Engineer may withhold source approval pending verification testing.

TABLE 902 C

MIX PHYSICAL PROPERTIES		
TEST PROPERTY	**TEST METHOD**	**SPECIFICATION LIMITS**
Minimum Cementitious Materials Factor, lb/yd^3	—	580
Maximum Content of Portland Cement, lb/yd^3	—	550
Water/Cementitious Materials Ratio by Wt.	—	0.45
Corrosion Inhibitor, gal/yd^3	902.06.05	2.0
Synthetic Fibers, lb/yd^3	902.15	1.5
Permeability of Field Concrete, moving average of three tests, coulombs max	T 277 Modified	2500
Permeability of Field Concrete, individual test, coulombs max	T 277 Modified	3000
Shrinkage at 28 days, microstrains	C 157	400

Note 1: Only Type I or II Portland cement shall be used.

Note 2: Mixes shall contain ground iron blast furnace slag, fly ash or microsilica.

Note 3: The water to cement ratio shall be based upon the total water to cementitious materials ratio. The gallonage of the corrosion inhibitor shall be included in the water/cementitious materials ratio.

Note 4: The permeability test value of field concrete shall be the average of two test specimens representing production concrete. Test specimens shall be molded on the project site in 4 x 8 in. molds conforming to M 205. Test specimens shall be handled under same conditions as compressive strength test specimens in conformance with C 31 for the first seven days. When seven days old, they shall be cured in a 100 F water bath for the remainder of the 28 day curing. The 28 day rapid chloride permeability of the specimens will be determined in conformance with T 277. Test for the geometry of test specimens will be waived.

Note 5: Shrinkage tests will be performed on trial mixes only.

Note 6: High range water reducing admixture may be used except the water reducing requirements will be waived.

Note 7: A sealer conforming to 902.12 shall be used on the finished surface.

902.10.04 Trial Batch. A trial batch shall be prepared to certify that each mix meets 902.10.05 and 902.10.06. Approval will be given when the test results meets the minimum required average strength.

Make arrangements with the AME at least two weeks in advance, to have an authorized representative present during the batching and testing. Each trial batch shall consist of at least 3 yd^3 of concrete. Supply all equipment, and labor required to produce the trial batches and conduct the required tests at no additional cost to the Administration.

The AME may waive the requirement for a trial batch when past performance records show that the required average strength requirement has been met.

902.10.05 Design Required Average Strength.

Specified compressive strength, f_c', psi	Required average compressive strength, f_{cr}', psi
$f_c' \leq 5000$	Use the larger value computed from Eq. (A-1) and (A-2) $f_{cr}' = f_c' + 1.34s$ (A-1) $f_{cr}' = f_c' + 2.33s - 500$ (A-2)
Over 5000	Use the larger value computed from Eq. (A-1) and (A-3) $f_{cr}' = f_c' + 1.34s$ (A-1) $f_{cr}' = 0.90 f_c' + 2.33s$ (A-3)

where:

f_c' = the 28 day specified compressive strength.
s = the standard deviation as specified in 902.10.06.

A test is defined as the average strength of two companion cylinders.

902.10.06 Standard Deviation.

(a) When past performance records are available, a standard deviation will be established from documented performance records of the producer consisting of a minimum of 15 consecutive 28 day compressive strength tests obtained within the last 12 months.

The standard deviation will be established as the product of the calculated standard deviation and multiplier.

NUMBER OF TESTS	MULTIPLIER FOR STANDARD DEVIATION
15	1.16
20	1.08
25	1.03
30 or more	1.00

Interpolate for intermediate number of tests.

(b) When past performance records are not available, the required average strength shall meet to the following:

Specified compressive strength, f_c', psi	Required average compressive strength, f_{cr}', psi
$f_c' < 3000$	$f_{cr}' = f_c' + 1000$
$3000 \leq f_c' \leq 5000$	$f_{cr}' = f_c' + 1200$
$f_c' > 5000$	$f_{cr}' = 1.10\, f_c' + 700$

902.10.07 Standard of Control. The average of all sets of three consecutive strength tests shall equal or exceed the critical value as specified in 902.10.03 which shall be computed using the following formula:

$$\text{Critical Value} = fc' + (1.14 \text{ X } S) - 500$$

Failure to conform to this criteria shall be cause for immediate investigation and remedial action up to and including suspension of production. A design standard deviation equal to 15 percent of the specified strength shall be used for calculation until a minimum of 15 test results are obtained.

The actual average strength and standard deviation shall be computed upon the availability of 28 day strength data comprising a minimum of 15 tests. Should this determination indicate an excessive margin of safety, the concrete mix may be modified to produce lower average strength as approved by the Engineer. If these calculations indicate a coefficient of variation greater than 15, the quality of the concrete and testing will be evaluated.

902.10.08 Testing. Sampling per T 141. Testing as follows:

TEST	METHOD	MINIMUM TEST FREQUENCY	RESPONSIBILITY
Temperature (e)	T 309	1 per 50 yd^3 (or fraction thereof)	Project Engineer
Slump (a)(e)	T 119	1 per 50 yd^3 (or fraction thereof)	Project Engineer
Air Content (a)(e)	T 152 T 196	1 per 50 yd^3 (or fraction thereof)	Project Engineer
Compression (b)(c)(d)	T 23	1 per 50 yd^3 (or fraction thereof)	Project Engineer
Compression (b)(c)(d) Mix No. 7 Only	T 23	3 per Day	Project Engineer

(a) A second test will be made when the first slump or air content test fails. Acceptance or rejection will be based on the results of the second test.
(b) Compressive strength tests are defined as the average of two companion cylinders.
(c) The Contractor shall be responsible for the making of all early break cylinders and furnishing the molds, stripping, curing/delivery of all cylinders, including 28 day cylinders, to the testing laboratory.
(d) The Project Engineer will be responsible for making, numbering and signing the 28 day cylinders.
(e) When constructing plain and reinforced concrete pavements, the testing frequency for slump, air content, and temperature shall be 1 per 100 yd^3 or fraction thereof.

902.10.09 Acceptance. Concrete will be acceptable if both of the following requirements are met:

(a) The average of all sets of three consecutive strength tests equal or exceed the specified design strength.

(b) No individual strength test (average of two companion cylinders) falls below the specified design strength by more than 500 psi.

902.10.10 Price Adjustment. A price adjustment will be based on the Contract unit price per cubic yard of concrete. If the unit is a lump sum item, the price per cubic yard for the concrete will be determined by dividing the cubic yards into the Contract lump sum price.

(a) Test Results More Than 500 psi Below the Specified Design Strength. Failing strength tests will be considered individually with a price adjustment being applied on the percentage basis as shown below.

(Price per yd^3) X (quantity of yd^3 represented by the failing concrete strength) X (percent of failure).

Example:

$400.00 per yd^3 X 50 yd^3 X [1-(3600/ 4500 psi)] = $4,000.00

No payment will be allowed when the test results fall below 50 percent of the specified design strength for structural concrete or 40 percent for incidental concrete.

The Engineer will determine when the strength of the concrete represented by the failing tests is sufficient to remain in place or whether it must be removed and replaced with Specification concrete.

(a) Test Results 500 psi or Less than the Specified Design Strength. Strength failures 500 psi or less than the specified design strength will be averaged with the next two consecutive tests. If those two tests include a failure greater than 500 psi, those tests will be evaluated as in 902.10.10(a) and replaced with the next consecutive test. If the resulting average falls below the specified design strength, a price adjustment will be applied as specified in the table below. Any failure will only be included in one grouping.

STRENGTH BELOW THE SPECIFIED (avg of 3 tests) DESIGN LEVEL, psi	**ADJUSTMENT FACTOR**
MIX NO. 1 THRU MIX NO. 7	
1 – 100	0.005
101 – 200	0.01
201 – 300	0.02
301 – 400	0.04
401 – 500	0.08

Adjustment price equals (price per yd^3) X (quantity of yd^3 represented by the failing cylinders) X (the adjustment factor).

Example:

$400.00 per yd^3 X 50 yd^3 X 0.01 = $200.00

902.11 MORTAR FOR GROUT. Mortar used for grouting anchor bolts, pipe, handrail posts, and miscellaneous items shall be composed in accordance with one of the following:

(a) One part Portland cement or blended hydraulic cement and one part mortar sand by dry loose volume.

(b) Prepared bag mixes consisting of Portland cement or blended hydraulic cement and mortar sand. The prepared mixes shall produce a mortar meeting the strength requirements specified in the Contract Documents.

(c) Use nonshrink grout when specified. The grout shall have a minimum compressive strength of 5000 psi in seven days when tested as specified per T 106, except that the cube molds shall remain intact with a top firmly attached throughout the curing period. The nonshrink grout shall have a minimum expansion of 0.0 percent after seven days when tested as specified per T 160.

(d) Epoxy grout shall consist of sand and epoxy mixed by volume in per the manufacturer's recommendations. The grout shall be capable of developing a minimum compressive strength of 6500 psi in 72 hours when tested per MSMT 501. Sand for epoxy grout as specified in 901.01.

(e) An epoxy or polyester anchoring system may be used when approved by the Engineer in accordance with the manufacturer's recommendations. Strength values shall be as specified in the Contract Documents.

902.12 LINSEED OIL. Shall consist of a 50-50 mixture (by volume) of boiled linseed oil meeting Federal Specification TT-L-190 and kerosene per D 3699.

902.13 LATEX MODIFIED CONCRETE. Portland cement concrete containing prequalified Laboratory approved styrene butadiene latex emulsion is defined as Latex Modified Concrete (LMC).

Latex emulsion shall have a minimum of 90 percent of the nonvolatiles as styrene butadiene polymers. The latex emulsion as specified in Table 902.13 A. The material shall be stored in suitable containers and be protected from freezing and exposure to temperatures in excess of 85 F.

LMC shall be proportioned using volumetric mixing and designed as follows:

LATEX MODIFIED CONCRETE	
MATERIAL	**SPECIFICATION LIMITS**
Portland Cement, CWT/yd^3, min	6.6
Latex Emulsion/Cement Ratio	0.31 – 0.34
Water/Cement Ratio, max	0.22
Entrained Air, %	6.0 ± 3
Slump, in.	5 ± 1

The physical properties of LMC shall conform to Table 902.13 B. The Contractor shall furnish the necessary 3 X 6 in. molds per M 205 to be used for the fabrication of compressive strength cylinders.

Control and Acceptance Sampling.

(a) Submit a two qt minimum sample, of the styrene butadiene latex emulsion to the AME daily for each lot of material used in a day's production.

(b) A batch for LMC is defined as the capacity of the equipment being used on the project. Slump and air samples will be taken and tested before the placement of a batch is permitted. The slump shall be measured four to five minutes after discharge from the mixer. The test material shall be deposited off the deck and not be disturbed during this

waiting period. One additional sample for slump and air will be taken randomly during the placement of each batch. For seven day compressive strength, two tests each per batch are required. A test is defined as consisting of two companion cylinders. The samples for these tests will be taken at random while the placement is in progress.

TABLE 902.13 A

REQUIREMENTS FOR CHEMICAL PROPERTIES OF LATEX EMULSION MATERIALS

PROPERTY	SPECIFICATIONS		QUALITY ASSURANCE TESTS	
	LIMITS	TOLERANCE	PREQUALIFICATION TESTS	CONTROL AND ACCEPTANCE
Color	White	—	X	X
pH	9.0 – 11.0	—	X	X
Weight, lb/gal	8.40 – 8.47	—	X	X
Solids Content, %	46 – 53	—	X	X
*Butadiene Content, % of polymer	30 – 40	—	—	—
Viscosity @ 10 rpm-cps	Match Original	± 20	X	X
*Surface Tension, dynes/cm max	50	—	—	—
*Mean Particle Size, polymer – Å	1400 – 2500	—	—	—
Coagulum, % max	0.10	—	X	X
*Freeze-Thaw Stability, coagulum, % max	0.10	—	X	X
Infrared Spectra of Latex Film	Match Original	—	X	X
Infrared of Alcohol, Soluble Portion of Latex	Match Original	—	X	X
Shelf Life, min	1 yr	—	X	—

Note 1: Quality assurance tests shall be conducted as specified in MSMT 612 except those denoted by an * shall be conducted as specified in FHWA RD – 78-35.

Note 2: The original or prequalification sample shall be accompanied by the producer's certification on all of the tests and properties noted above and as specified in TC-1.02. The certification shall contain actual test values of the product and the infrared spectrograph.

Note 3: A separate certification is required for each lot of material. The certification shall note the date of manufacture, lot size, and whether or not the material is identical to the formulation of the original sample.

TABLE 902.13 B

LATEX MODIFIED CONCRETE PHYSICAL PROPERTIES			
TEST PROPERTY	**TEST VALUES**	**QUALITY ASSURANCE TESTS**	
		PREQUALIFIED TESTS	**CONTROL AND ACCEPTANCE**
7 Day Compressive Strength, psi min	3000	X	X
28 Day Compressive Strength, psi min	3500	X	—
42 Day Compressive Strength, psi min	3500	X	—
7 Day Flexural Strength, psi min	550	X	—
28 Day Flexural Strength, psi min	650	X	—
42 Day Shear Bond Strength, psi min	2000	X	—
Durability Factor, 300 cycles, % min	85	X	—
Chloride Permeability, Ppm max	510	X	—
Scaling Resistance, 50 cycles, max	3	X	—

Note 1: Quality assurance tests shall be conducted as specified in MSMT 721.

Note 2: Seven Day Compressive Strength Test will be used for Control & Acceptance of the material. The minimum specified design strength is 3000 psi at seven days. The mix design approval and acceptance will be based on a coefficient of variation of 10 percent with a probability of 1 in 10 tests falling below the specified strength. Only test values 80% or greater than the specified strength will be accepted

902.14 RAPID HARDENING CEMENTITIOUS MATERIALS FOR CONCRETE PAVEMENT REPAIRS. Materials shall be a dry, packaged cementitious mortar having less than 5 percent by weight of aggregate retained on the 3/8 in. sieve and meet the following requirements:

Classification.

Class I — For use at ambient temperatures below 50 F.
Class II — For use at ambient temperatures of 50 to 90 F.
Class III — For use at ambient temperatures above 90 F.

Chemical Requirements. C 928 except that no organic compounds such as epoxy resins or polyesters as the principal binder.

Physical Requirements. Meet the following when tested per MSMT 725:

COMPRESSIVE STRENGTH, psi min				
CLASSIFICATION	**< 2 hr**	**2-6 hr**	**6 hr**	**28 days**
Type I — Slow	—	—	2000	4500
Type II — Rapid	—	2000	—	4500
Type III — Very Rapid	2500	—	—	4500

TEST RESULTS	
TEST PROPERTY	**LIMITS**
Bond Strength, 7 days, psi min	2000
Length Change, increase after 28 days in water, based on length at 3 hr, % max	+ 0.15
Length Change, decrease after 28 days, % max	- 0.15
Freeze Thaw, loss after 25 cycles in 10% $CaCl_2$ solution, % max	8
Initial Setting Time, minutes min	10

Marking. All packages delivered to the project shall be marked with the following information:

(a) Date material was packaged.

(b) Approximate setting time.

(c) Recommended dosage of water or liquid component.

(d) Mixing instructions.

(e) Class or temperature range.

Certification. The manufacturer shall furnish certification as specified in TC-1.02 showing the actual test results for each class and type of material submitted to the Laboratory.

902.15 SYNTHETIC FIBERS. When synthetic fibers are specified in the Contract Documents, the fibers shall be 1/2 to 1-1/2 in. long and conform to C 1116, Type III. The manufacturer shall furnish certification as specified in TC-1.02. The quantity of fibers used and their point of introduction into the mix shall conform to the fiber manufacturer's recommendations.

CATEGORY 950
TRAFFIC MATERIALS

SECTION 950.15 TRAFFIC SIGNAL HEADS

804 **DELETE** the table and section titled Hardware in its entirety

INSERT The following:

ITEM	DESCRIPTION	A	B	C	D
1	Aluminum Alloy - Casting	A 319	A 380	A 713	6063 T6
2	Yield Strength, ksi	18	23	25	25
3	Tensile Strength, ksi	27	47	35	30
4	Brinell Hardness	70	80	75	73
5	Elongation (% in 2 in.)	1.5	4	3	12
6	Stainless Steel	A 316	-	-	-
7	Galvanized Steel	A 157	A 153	G 60	-
8	Steel-Flat Sheet	16 gauge	-	-	-
9	Coating	*	Anodized Finish	-	-
10	Brass	CZ120	-	-	-

* The signal head housing shall be yellow in conformance with Federal Standards 595, Color Chip No. 13538. The signal head door and visor shall be optical flat (dull) black Federal Standards 595, Color Chip No. 37038. Aluminum signal heads shall be painted using fusion bonded polyester coating method.

Hardware.

(a) Hub plate shall conform to A, 1 thru 5 and 9B.

(b) Span wire hanger clamp shall conform to C, 1 thru 5.

(c) Balance adjuster body shall conform to 10A.

(d) Balance adjuster eyebolt and hardware shall conform to 6A, 7A, and 7B.

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(e) 2-way lower arm shall conform to 7C and 8A.

(f) 2-way tri-stud arm shall conform to A, 1 thru 5.

(g) Span wire entrance fitting shall conform to C, 1 thru 5.

(h) Mast arm mount signal bracket (1-way, 2-way, and 5-section) shall conform to 1A and 1D.

(i) Side pole upper and lower arm assembly shall conform to 1B thru 5B or 1D thru 5D.

The maximum allowable play or space between the sides of the eyebolt and span wire clamp shall be 0.062 in.

808 **ADD** under **Electrical**

(f) Terminal blocks screws shall be of the captive type secured by fasteners on the reverse side of the terminal block. Terminal block screws shall be a # 10 size.

(g) Male spade terminal ends shall be furnished for each position on the terminal block angled at 45 degrees and perpendicular to the terminal block face.

CATEGORY 900
MATERIALS

SECTION 951 — PAVEMENT MARKING MATERIALS

951.01 NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKINGS

All nontoxic lead free waterborne pavement marking materials shall be ready-mixed, pigmented binder, emulsified in water, and capable of anchoring reflective beads that are applied separately.

The pavement marking material shall not contain any hazardous material listed in the Environmental Protection Agency Code of Federal Regulations (CFR) 40, Section 261.24, Table 1.

951.01.01 Waterborne Physical Requirements. The nontoxic lead free waterborne pavement marking material shall conform to the manufacturer's formulations as initially approved for use by the Administration and shall be controlled from batch to batch. All paint shall be evaluated in conformance to the requirements listed below.

Production batch samples will be subject to random tests, such as but not limited to, X-ray spectroscopy, infrared spectroscopy, ultraviolet spectral analysis, and atomic absorption spectroscopy.

The combined total of lead, cadmium, mercury, and hexavalent chromium shall not exceed 100 ppm, when tested by X-ray fluorescence spectroscopy, or other method capable of detection at this level.

For each production batch, the Contractor shall provide the Administration with the manufacturer's certified analysis conforming to TC-1.02 of the Standard Specifications.

(a) Viscosity. The viscosity shall be 85 ± 10 KU when tested in conformance with D 562.

(b) Pigment For Yellow Pavement Marking Material. The colorants used to attain the color of the yellow product shall be one or more of the following, along with titanium dioxide: Pigment Yellow 65, Pigment Yellow 75, and opaque Pigment Yellow 74.

(c) Color and Appearance. Color and appearance shall be evaluated using the following: CIE 1976 L*a*b*, illuminant D 65, and standard observer angle 1931 CIE 2 degrees. The geometry shall be 45/0 or 0/45, or d/8, excluding specular gloss. Measurements shall be taken from samples applied to an opacity chart, e.g., Leneta Form 2A, at a wet film thickness of 15 mils ± 1 mil. The applied sample shall have been allowed to dry for at least 12 hours before measurements are taken. The evaluation shall be as follows:

(1) Production: The color of the dry paint film of the production sample shall match the L*a*b* values provided, under the specified conditions. For white material the values are: L* = 94.80, a* = -2.35, b* = 3.20. For yellow material the values are: L* = 80.70, a* = 19.40, b* = 88.65. The colors shall match when compared instrumentally.

(2) Control. The maximum permissible variation from the specified L*a*b* values shall be 2.0 ΔE_{cmc}. The measurements shall be taken from a sample applied over the black portion of an opacity chart.

The Administration will approve or disapprove any batch based on a laboratory visual evaluation for blemishes and irregularities in the test specimen (i.e. cracks, flaking, surface depressions, pooling, etc.) that would interfere with the measurement of color and appearance on the opacity chart. The Administration will make the final decision.

(3) Reflectance. The reflectance, without beads, and using CIE XYZ Yxy, shall be a minimum Y of 80 percent for white production batches; and a minimum of 50 percent for yellow production batches with a maximum of 60 percent. The measurement shall be taken from a sample applied over the black portion of an opacity chart.

(4) Color Difference over Black and White.. For any production batch the measured color difference between readings taken over the black portion of the opacity chart from those taken over the white portion shall be a maximum value of 1.0 ΔE_{cmc} for white products and 1.3 ΔE_{cmc} for yellow products.

(5) Yellowness Index. The yellowness index of the white material, when determined according to E 313, Using Equation 1 and the coefficients for CIE D 65 illumination, 1931 from Table 1 in that standard, shall not exceed 8.0.

(d) Flexibility. The pigmented binder shall not display cracking or flaking when subjected to the flexibility test of Federal Test Method TT-P 1952D, with the exception that the panels shall be 35 to 31 gauge (0.0078 to 0.0112 in.) tin plate approximately 3 x 6 in. The tin plates shall be lightly buffed with steel wool and thoroughly cleaned with solvent and dried before being used for the test.

(e) Weight per Gallon. The weight per gallon for a production batch, when determined according to D 1475, shall be within ± 0.3 lb/gal of the value obtained by The National Transportation Product Evaluation Program (NTPEP), and reported on a NTPEP deck designated "north". When the Administration waives the NTPEP requirements, another target value will be stipulated.

951.01.03 Glass Bead Physical Requirements. Each lot of glass beads shall be sampled in conformance with the Administration's Frequency Guide and shall be submitted to the Administration's Office of Materials and Technology for testing and approval prior to use.

Glass beads shall be colorless, clean, transparent, and free of milkiness and excessive air bubbles.

Reflective glass beads shall conform to M 247, except that the gradation shall conform to the following:

PERCENT PASSING			
SIEVE SIZE	**Standard Beads**	**Large Beads**	**Maryland Blend**
12 (1.70 mm)	—	100	100
14 (1.40 mm)	—	95 – 100	98 – 100
16 (1.18 mm)	—	80 – 95	88 – 97
18 (1.00 mm)	—	10 – 40	48 – 70
20 (0.85 mm)	100	0 – 5	28 – 50
30 (0.60 mm)	75 – 95	—	—
50 (0.30 mm)	15 – 35	—	5 – 25
80 (0.18 mm)	—	—	0 – 5
100 (0.15 mm)	0 – 5	—	—

Moisture resistance and flotation test are not required.

(a) Refractive Index. The refractive index shall be 1.50 minimum, when tested in conformance with MSMT 211.

(b) Roundness. Glass beads shall be smooth, spherical in shape, free of sharp angular scars, scratches, or pits, and shall contain a minimum of 60 percent silica. Beads shall have a minimum average roundness of 75 percent when tested in conformance with D 1155.

951.01.04 Qualification. Pavement marking material manufacturers desiring to have their material formulations approved under this Special Provision shall have their formulations evaluated on a NTPEP North Test Deck unless waived by the Administration. Only NTPEP evaluated formulations will be considered candidates for selection, unless the requirement is waived.

951.01.05 Field testing. Materials conforming to this specification shall be field evaluated for performance on a NTPEP North Test Deck. Materials performing satisfactorily throughout the test period will be placed on the Administration's Qualified Products List. All marking materials supplied under the Contract Documents shall be identical in composition to the materials submitted for initial NTPEP testing. The Office of Materials and Technology will determine conformity with these requirements.

951.01.06 Material Acceptance. Only Administration approved and stamped materials conforming to these Specifications shall be used.

Prior to the shipment of any pavement marking material batch, the manufacturer shall provide access for the Administration's representative to collect samples of the material from each production batch. The samples shall be sent to the Administration laboratory for QA testing. Each sample shall be accompanied by a certified analysis conforming to TC 1.02, showing compliance with the physical and chemical requirements of this Specification, and a statement certifying that any marking material supplied under the Contract Documents is identical in composition to the material submitted for initial NTPEP testing. The Administration will

determine conformity with these requirements. Administration authorization shall be required before a batch or a portion of a batch is shipped.

Paints shall be compatible with cleaning solvents used in equipment cleaning.

Nontoxic waterborne pavement markings shall not skin, curdle, settle or be unusable or difficult to apply within 12 months of the date of manufacture. The supplier, at the Administration's request, shall replace containers of marking material exhibiting an unacceptable level of settling, skinning, or curdling, as determined by the Administration. Marking material from a production batch shall not be used beyond 12 months after the date of manufacture.

951.01.07 Certification. The manufacturer shall explicitly certify in writing that any marking material supplied under the Contract Documents conforms to the formulation identified by the same product code or name placed on the NTPEP test deck from which it was approved. The same code or name as used in the published report from that test deck must identify the product. Failure to certify will be considered grounds for product batch rejection.

The manufacturer shall, in accordance with TC-1.02, explicitly certify, in writing, of any paint batch supplied under the Contract Documents that it complies with all applicable specifications. Failure to so certify will be considered grounds for product batch rejection. Certification for yellow nontoxic lead free waterborne pavement markings shall include, for the purpose of showing compliance with this specification, the name or the type of colorant used to achieve the yellow color. The Administration will keep the paint composition and chemical analysis information confidential.

The Certification shall also, contain the following:

(a) Manufacturer's name.
(b) Place (address) of manufacture.
(c) Color of material.
(d) Date of manufacture (month-day-year).
(e) Lot or batch identification.
(f) Size of lot/batch.
(g) The recommended paint temperature at the spray gun.
(h) Material Safety Data Sheets for all materials submitted for testing and application.

The Contractor shall furnish a copy of this certification to the Administration's representative before applying the paint batch it represents.

951.01.08 Production Facility.

(a) The producer shall have a facility, presently in operation, capable of producing the traffic paint in the quantity and quality required by the Administration. This facility will be subject to the Administration's approval.

(b) The producer shall have a laboratory, subject to the Administration's approval, that is capable of performing the required tests.

CATEGORY 900
MATERIALS

SECTION 951 — PAVEMENT MARKING MATERIALS

951.02 LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS. All materials composing the reflective thermoplastic material shall be lead free. Reflective thermoplastic material shall be homogeneously composed of pigment, filler, resins and glass beads and shall conform to the following.

951.02.01 Reflective Thermoplastic Components.

(a) Composition.

COMPONENT	TEST METHOD	COLOR	
		WHITE	YELLOW
Binder, % min	Certified	18.0	18.0
Premixed Reflective Beads, % min	MSMT 614	30.0	30.0
Titanium Dioxide, % min	X-Ray Fluorescence	10.0	N/A
Calcium Carbonate Inert fillers, % max	D 34	42.0	*
Yellow Pigment, %	—	N/A	*

* Amount of yellow pigment, calcium carbonate and filler shall be at the option of the manufacturer, provided all other requirements are in conformance.

Restrictions. The combined total of lead, cadmium, mercury and hexavalent chromium shall not exceed 100 ppm when tested by X-Ray Fluorescence, ICP, or comparable method capable of this level of detection. Diarylide type pigments shall only be used when the manufacturer or pavement marking material application temperature does not exceed 392 F.

(b) Binders. The binder shall be alkyd consisting of maleic modified glycerolester of resin and other plasticisers.

(c) Titanium Dioxide. The titanium dioxide shall be rutile type.

951.02.02 Reflective Thermoplastic.

(a) Physical Properties.

TEST PROPERTY	TEST METHOD	SPECIFICATION LIMITS
Bond Strength, psi min.	MSMT 614	180
Softening Point, F		215 ± 15
Low Temperature Stress Resistance	T 250	No Cracks

(b) Specific Gravity. The specific gravity of the white and yellow pavement marking material shall be 1.7 to 2.2 when tested in conformance with D 153, Method A at 77 F.

(c) Color. After heating for 4 ± 0.5 hours at 425 ± 3 F, the thermoplastic shall be as specified in E 1347 and the following:

(1) Production. The color of the cured thermoplastic material film of the production sample shall match the Federal Standard 595 Color chips specified when compared by instrumental measurement.

(2) Control. Control color matching determinations will be made using a Pacific Scientific Color Machine, and an observation angle of 2°, and the CIE Chromaticity Coordinate Color Matching System under light source Illuminate C, with the following tolerances permitted between the standard chip and the cured thermoplastic film sample:

	WHITE Color No. 17886		YELLOW Color No. 13538	
	X	Y	X	Y
Standard Chip	0.310	0.330	0.480	0.450
Delta Tolerance	± 0.020	± 0.020	± 0.030	± 0.030

(3) Reflectance.

COLOR	TEST METHOD	DAYLIGHT REFLECTANCE at Degree	PERCENT MIN
White	Fed Std 595 No. 17886	45 - 0	80
Yellow	Fed Std 595 No. 13538	45 - 0	50

(d) Yellowing Index. The yellowing index of the white material shall not exceed 8 prior to QUV and 15 after QUV when tested in accordance with E 313.

951.02.03 Glass Beads Physical Requirements. The glass beads shall conform to M 247 and the following:

GRADATION SIEVE SIZE	PERCENT PASSING
	STANDARD BEADS
0.85 mm (No. 20)	100
0.60 mm (No. 30)	75 - 95
0.30 mm (No. 50)	15 - 35
0.15 mm (No. 100)	0 - 5

Glass beads shall be colorless, clean, transparent, and free of milkiness, excessive air bubbles, and essentially free of sharp angular scarring or scratching. The beads shall be spherical in shape and shall contain a minimum of 60 percent silica. Roundness shall be 75 percent minimum when tested as specified in D 1155, Procedure A.

Glass beads shall have a 1.50 minimum refractive index when tested in conformance with MSMT 211.

Glass beads shall not absorb moisture in storage and shall remain free of clusters or lumps.

951.02.04 Field Testing. Materials conforming to this specification shall be field evaluated at the National Transportation Product Evaluation Program (NTPEP) Northeast test deck for performance. Materials performing satisfactorily throughout the test period will be placed on the Administration's Prequalified Materials List. All marking materials supplied during the Contract shall be identical in composition to the materials submitted for initial testing. Conformity with these requirements will be determined by the Office of Materials and Technology (OMT).

951.02.05 Sampling for Preapproval. Sources supplying thermoplastic material and glass beads shall be submitted by the Contractor to the Engineer for approval in conformance with the Contract Documents.

Each lot of thermoplastic material will be sampled at the source and tested by the Administration over two construction seasons. If 95 percent of the lots tested conform to Specifications, source samples will no longer be required and the manufacturer may ship directly to the project. All shipments shall be accompanied by a manufacturer's certification in conformance with TC-1.02 and shall include the following:

(a) Manufacturer's name.

(b) Place of manufacture.

(c) Material color.

(d) Date of manufacture (month-year).

(e) Lot identification.

(f) Size/quantity of lot represented.

Random samples will be taken on the project in conformance with the MSMT Sample Frequency Guide and tested for conformance with these specifications. Nonconformance may result in the suspension from the certification program until conformance is reestablished. To reestablish conformance, the manufacturer shall achieve a 95 percent approval level from samples taken at the manufacturer's facility and tested by the Administration prior to shipment to Administration projects.

Each lot of glass beads shall be sampled in conformance with the MSMT Sample Frequency Guide and shall be submitted to the OMT for testing and approval prior to use.

Sampling will be by batch or lot which is defined as a maximum of 44 000 lbs of material.

951.02.06 Certification. The Contractor shall furnish notarized certification as specified in TC-1.02. The manufacturer shall certify that any reflective thermoplastic materials supplied during the Contract conforms to the identical formulation as the samples submitted for evaluation on the NTPEP Northeast test deck, and identify the formulas by referring to the code used on the deck. Reflective thermoplastic materials which fail to conform will be rejected.

The manufacturer shall also provide the following:

(a) Material Safety Data Sheets for all materials submitted for testing and use.

(b) A facility, presently in operation, capable of producing the reflective thermoplastic materials in the quantity and quality required by the Administration.

(c) A laboratory subject to the Administration's approval which is capable of performing the required tests.

CATEGORY 900
MATERIALS

SECTION 951 — PAVEMENT MARKING MATERIALS

951.06 HEAT APPLIED PERMANENT PREFORMED THERMOPLASTIC PAVEMENT MARKING MATERIAL. The material shall be highly durable retroreflective polymeric materials designed for use as transverse lines, numbers, legends, symbols and arrow markings subjected to high traffic volumes and severe wear conditions such as shear action from crossover or encroachment.

The applied material shall adhere to hot mix asphalt (HMA), open-grade friction courses (OGFC), stone matrix asphalt (SMA), portland cement concrete (PCC), and any existing pavement markings when applied using normal heat from a propane fueled heat gun in conformance with manufacturer's recommendations.

The applied material shall be capable of conforming to pavement contours, breaks and faults, shall not be affected by weather conditions, and shall remain in place on pavement surfaces without being displaced by traffic.

The material shall have a minimum shelf life of one year.

The material shall conform to the requirements of the MUTCD and the following:

(a) Composition. The material shall consist of polymeric materials, pigments, binders and glass beads distributed throughout the entire cross-sectional area. The thermoplastic material shall conform to M 249 with the exception of the relevant differences for the material being supplied in the preformed state.

Restrictions. The combined total of lead, cadmium, mercury and hexavalent chromium shall not exceed 100 ppm when tested by X-ray diffraction, ICP, or comparable method capable of this level of detection. Nonleachable lead based pigments will not be permitted. Diarylide type pigments shall only be used when the manufacture or pavement marking material application temperature does not exceed 392 F.

(b) Color. Preformed markings shall consist of film with pigments selected and blended to match Federal Standard 595 color chip Nos. 17886 and 13538 for white and yellow respectively.

(c) Frictional Resistance. The surface of the applied material shall provide a minimum average skid resistance value of 50 BPN when tested in conformance with E 303.

(d) Patchability. The material shall be capable of use for patching worn areas of the same type in conformance with manufacturer's recommendations.

(e) Thickness. The minimum thickness, without adhesive, shall be 120 mils.

(f) Adhesion. The material shall retain a minimum of 65 percent adhesive bond after 100 cycles of freeze-thaw when tested in conformance with C 666, Method B.

(g) Beads.

(1) Index of Refraction. All beads shall meet the general requirements of M 247, Type I, and shall have a minimum index of refraction of 1.50 when tested using the liquid oil immersion method specified in MSMT 211.

(2) Acid Resistance. A maximum of 15 percent of the beads shall show a formation of a distinct opaque white layer on the entire surface after exposure to a 1 percent solution (by weight) of sulfuric acid in conformance with MSMT 211.

Field Testing. Materials conforming to this Specification shall be field tested at AASHTO regional test facilities, such as National Transportation Product Evaluation Program (NTPEP), for performance.

Materials performing satisfactorily throughout the test period, including exhibiting a minimum retained reflectance of 100 mcd/m^2/lux at the completion of the testing, will be placed on the Prequalified Materials List maintained by the Office of Materials and Technology.

Certification. Any marking material supplied during the Contract shall be identical in composition to the material submitted for initial testing. Samples submitted for testing shall be accompanied by the manufacturer's certified analysis in conformance with TC-1.02.

CATEGORY 900
MATERIALS

SECTION 951 — PAVEMENT MARKING MATERIALS

951.07 PERMANENT PREFORMED PATTERNED REFLECTIVE PAVEMENT (PPPRP) MARKING MATERIAL. The material shall be capable of adhering to hot mix asphalt and portland cement concrete surfaces, and to any existing pavement markings in accordance with manufacturer's recommendations by a pre-coated pressure sensitive adhesive. A primer shall be used to precondition the surface if recommended by the manufacturer. The markings shall be capable of being inlaid in new hot mix asphalt surfaces during the paving operation.

The material shall be highly durable and retroreflective and shall be fabricated of a polymeric material designed for longitudinal and legend/symbol markings subjected to high traffic volumes and severe wear conditions, such as shear action from crossover or encroachment on typical longitudinal configurations, and where high levels of reflectivity are required to ensure the safety of the motoring public.

The material shall be of good appearance and free from cracks. Edges shall be true, straight and unbroken. Line marking material shall be in rolls having no more than three splices per 150 ft of length. All marking materials shall be packaged in conformance with accepted commercial standards and shall have a minimum shelf life of one year.

The material shall remain in place on the pavement surface without being displaced by traffic, and shall not be affected by weather conditions.

951.07.01 Permanent Preformed Patterned Reflective Pavement Marking Material Components.

Composition. The material shall consist of a mixture of polymeric materials, pigments and reflective spheres distributed throughout the base cross-sectional area and reflective spheres bonded to the topcoat surface to provide immediate and continuing retroreflection.

Restrictions. The combined total of lead, cadmium, mercury and hexavalent chromium shall not exceed 100 ppm. Diarylide based pigments and non-leachable lead pigmentation are not acceptable. The presence of these compounds shall be tested for compliance to the specification by X-ray diffraction, ICP, or another comparable method, capable of this level of detection.

951.07.02 Permanent Preformed Patterned Reflective Pavement Marking Material Physical Requirements.

(a) Reflectance. The manufacturer shall certify that the white and yellow materials shall have the minimum initial retroreflectance values of 350 mcd/L/m^2 for white and 250 mcd/L/m^2 for yellow markings in any 528 ft section. Reflectance shall be measured using a reflectometer with CEN 30-meter geometry (88.76 degree entrance angle and 1.05 degree observation angle).

(b) Color. The color of preformed markings shall essentially match the 37886, 33538 or 37038 color chips for white, yellow or black respectively as shown in Federal Standard 595A.

(c) Frictional Resistance. The surface of the retroreflective pliant polymer shall provide a minimum initial average skid resistance value of 45 BPN when tested according to ASTM E 303.

951.07.03 Field Testing. Materials conforming to this specification shall be field evaluated at the National Transportation Product Evaluation Program (NTPEP) Northeast test deck for performance. Materials performing satisfactorily throughout the test period will be placed on the Administration's Prequalified Materials List. All marking materials supplied during the Contract shall be identical in composition to the materials submitted for initial testing. Conformity with these requirements will be determined by the Office of Materials and Technology.

951.07.04 Prequalification. Samples shall be taken by Administration for testing. The manufacturer shall submit any data from AASHTO NTPEP Northeast Test Deck which support material performance. Materials conforming to this Specification will be placed on the Administration's Prequalified List of Patterned Tapes.

951.07.05 Certification. The Contractor shall furnish notarized certification as specified in TC-1.02. The manufacturer shall certify that any reflective thermoplastic materials supplied during the Contract conforms to the identical formulation as the samples submitted for evaluation on the NTPEP Northeast test deck, and identify the formulas by referring to the code used on the deck. Reflective thermoplastic materials which fail to conform will be rejected.

The manufacturer shall also provide the following:

(a) Material Safety Data Sheets for all materials submitted for testing and use.

(b) A facility, presently in operation, capable of producing the reflective thermoplastic materials in the quantity and quality required by the Administration.

(c) A laboratory subject to the Administration's approval which is capable of performing the required tests.

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Pavement Legend

1.	1.5”	Hot Mix Asphalt Superpave 9.5 mm, PG 76-22, 8 PV, Level 4
2.	1.5”	Hot Mix Asphalt Superpave 9.5 mm, for Base, PG 64-22, Level 2
3.	Variable Depth	Hot Mix Asphalt Superpave 25.0 mm - PG 64-22 for Full-depth Patching, Level 2 (3” minimum lift and 5” maximum lift thickness) (See Note 1)
4.	5”	Hot Mix Asphalt Superpave 25.0 mm - PG 64-22 for Partial-depth Patching, Level 2(See Notes 1 & 2)
5.		Top of Existing Pavement Surface prior to 1.5" Carbide Grinding
6.		Top of Existing Pavement Surface after 1.5" Carbide Grinding
7.		Top of Existing JPCP Surface
8.		Existing Curb and Gutter
9.		Standard Type A Combination Curb and Gutter
10.	9”	Portland Cement Concrete Mix No. 3 (See Note 4).
11.	6”	Graded Aggregate Base Course Incidental to Curb & Gutter
12.	6”	Graded Aggregate Base Course
13.	9”	Jointed Plain Portland Cement Concrete, Mix No. 9
14.		Top of Subgrade and Limit of Excavation

Notes:

1. Information from the construction history and pavement borings indicate the existing pavement structure:
NB MD 187, MP 0.73 to 1.00: 4.5” Bituminous Concrete over 6” DGSA
NB MD 187, MP 1.00 to 1.59: 6” – 14.75” Bituminous Concrete over 6” GAB
SB MD 187, MP 0.73 to 1.07: 9” – 12.5” Bituminous Concrete over 6” GAB
SB MD 187, MP 1.07 to 1.59: 1.5” – 4.75” Bituminous Concrete over 6.3” – 9” JPCP

2. Patch to JPCP Surface in composite pavement sections.

3. If necessary, use the following item for wedge/level, as directed by the Engineer: Variable Depth Hot Mix Asphalt Superpave 9.5 mm for Wedge/Level, PG 64-22, Level 2 (Maximum Lift 2”)

4. This work is to be done at the contractor’s option. An additional 1’ width (maximum) excavation may be used for curb and gutter form placement. The additional excavation width is to be filled with a minimum of 6” GAB and 8” Jointed Plain Portland Cement Concrete Mix No. 3 or Mix No. 9 to the bottom of the HMA course. The cost shall be incidental to the unit price of linear foot of curb and gutter. The transverse joints shall match those of the curb and gutter. Dowel bars are not necessary.

SCALE: NONE	DRAWN BY: RRR	APPROVED BY: GMH

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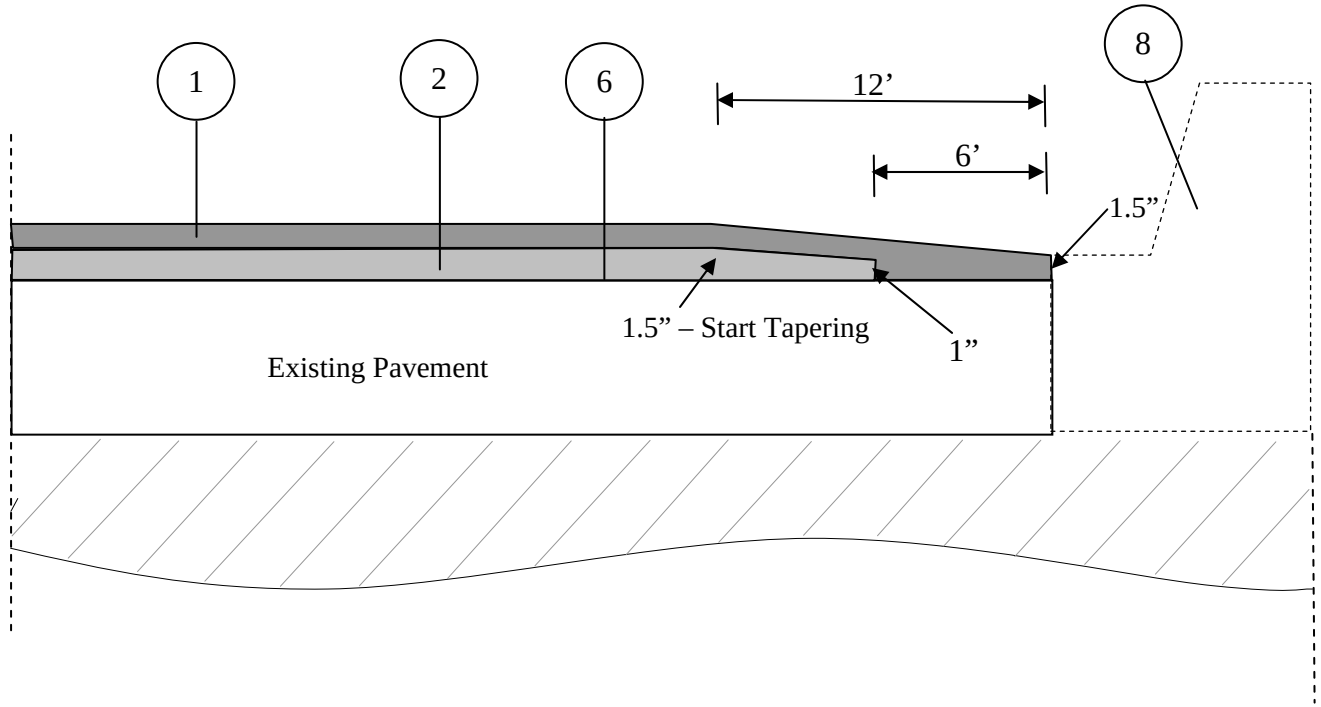
Pavement Section

MD 187 – Grind, Resurface, and Overlay



SCALE : NONE	DRAWN BY: RRR	APPROVED BY: GMH

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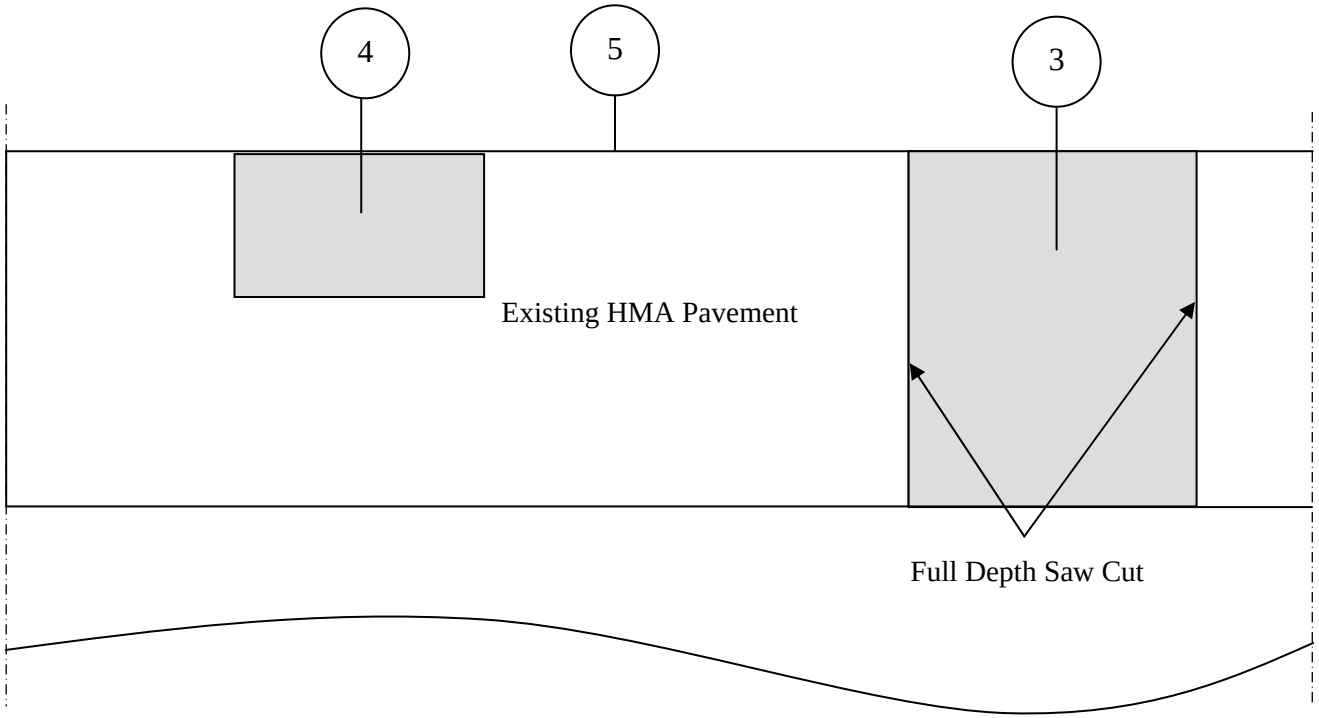
Pavement Section

MD 187 – Full Depth and Partial Depth Patching for Flexible Pavement



Note:
Full Depth Patch: If the underlying base layer is found to be deteriorated at the time of patch excavation, it should be removed and replaced with Graded Aggregate Base.

SCALE : NONE	DRAWN BY: RRR	APPROVED BY: GMH

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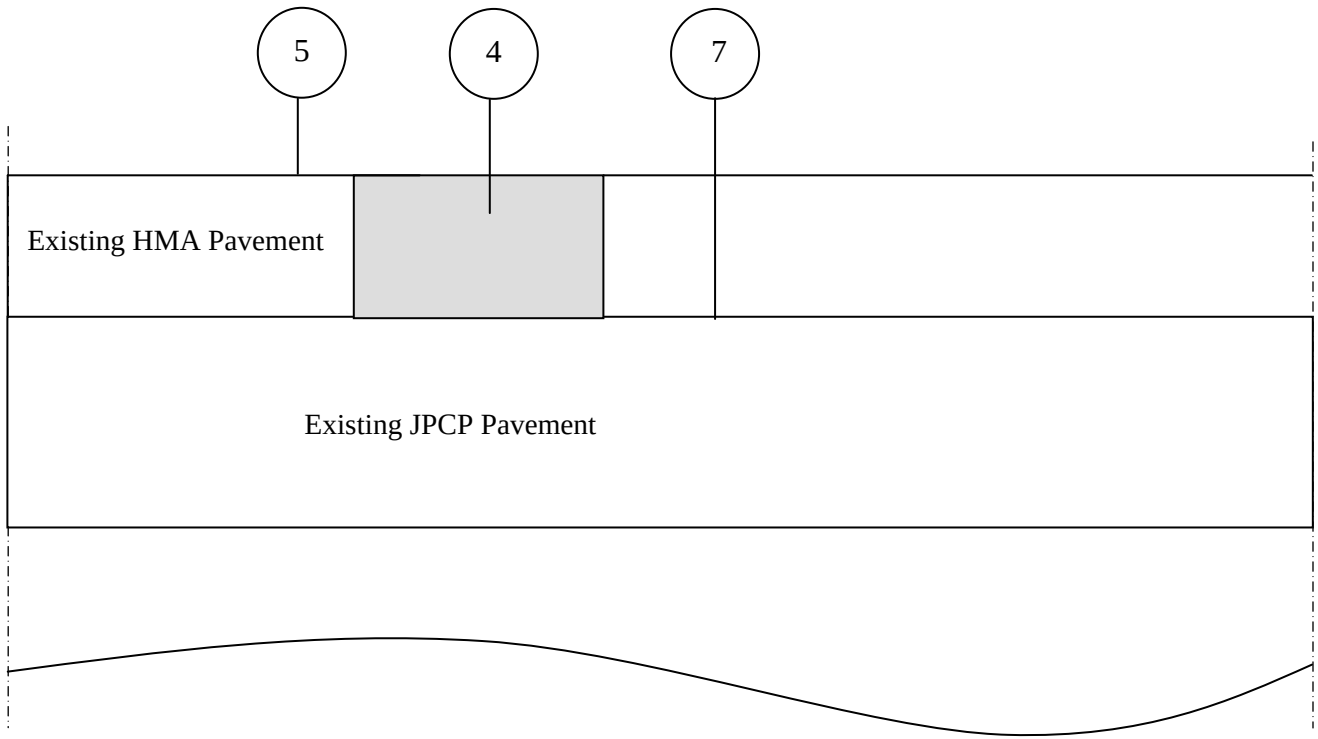
Pavement Section

MD 187 – Partial Depth Patching for Composite Pavement



SCALE : NONE	DRAWN BY: RRR	APPROVED BY: GMH

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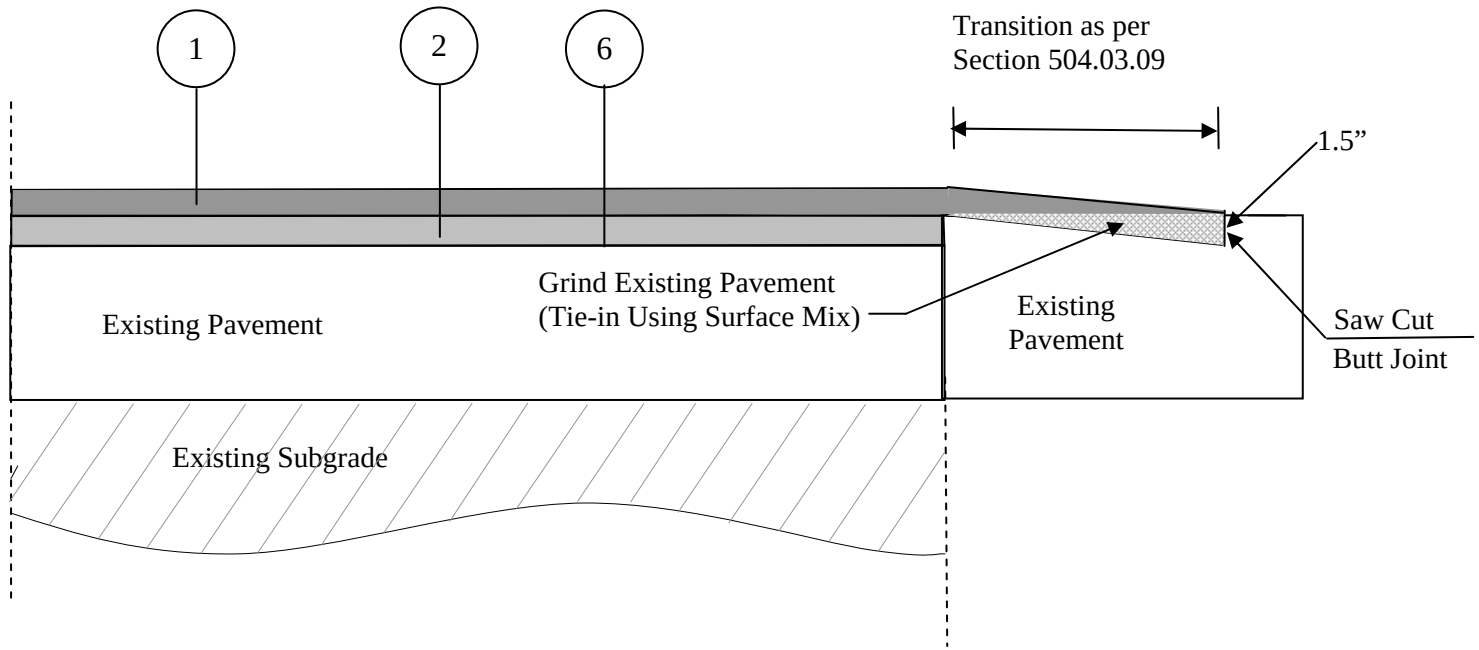
Pavement Section

MD 187 – Longitudinal Transition



Note:
Carbide grinding for the tie-in will not be measured. It will be incidental to the paving items.

SCALE : NONE	DRAWN BY: RRR	APPROVED BY: GMH

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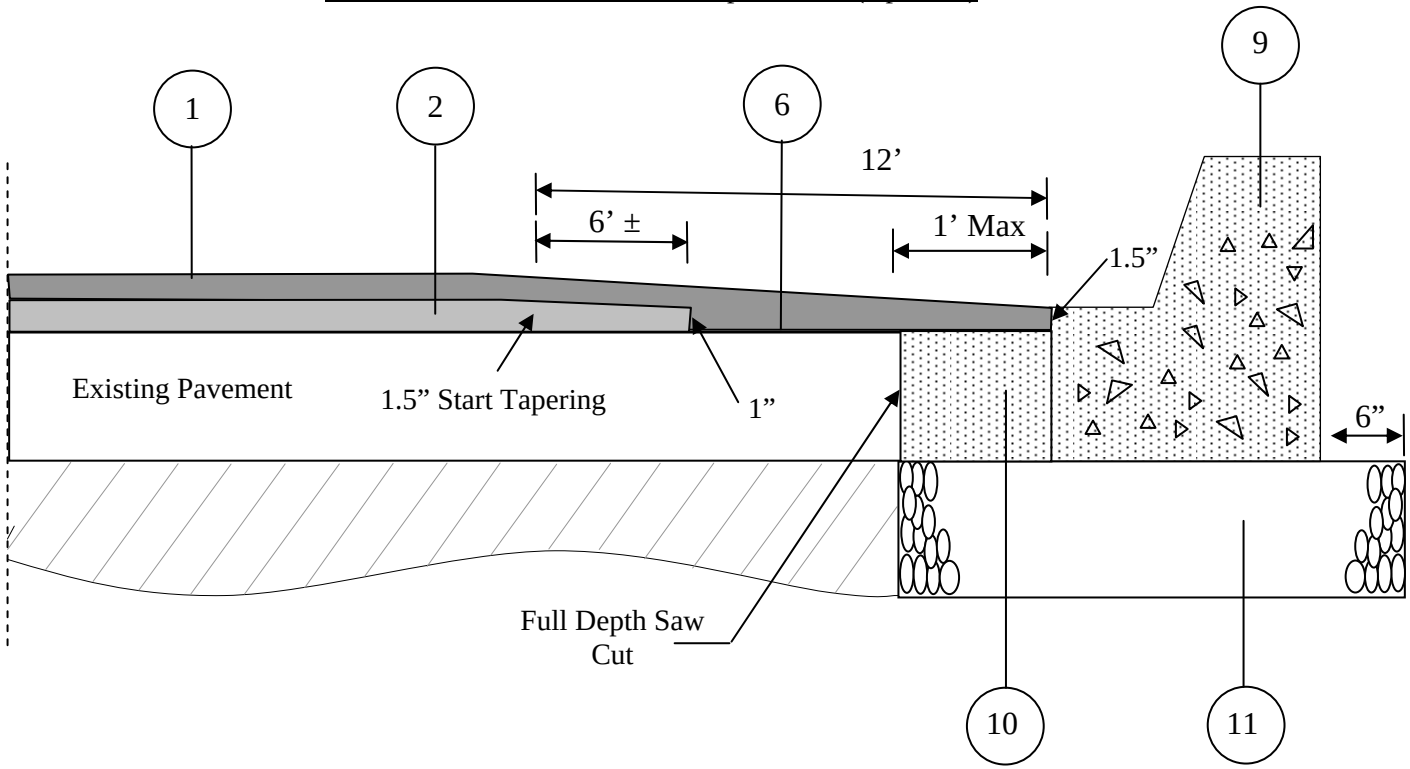
Pavement Section

MD 187 – New Curb & Gutter Replacement (Option 1)



SCALE : NONE	DRAWN BY: RRR	APPROVED BY: GMH

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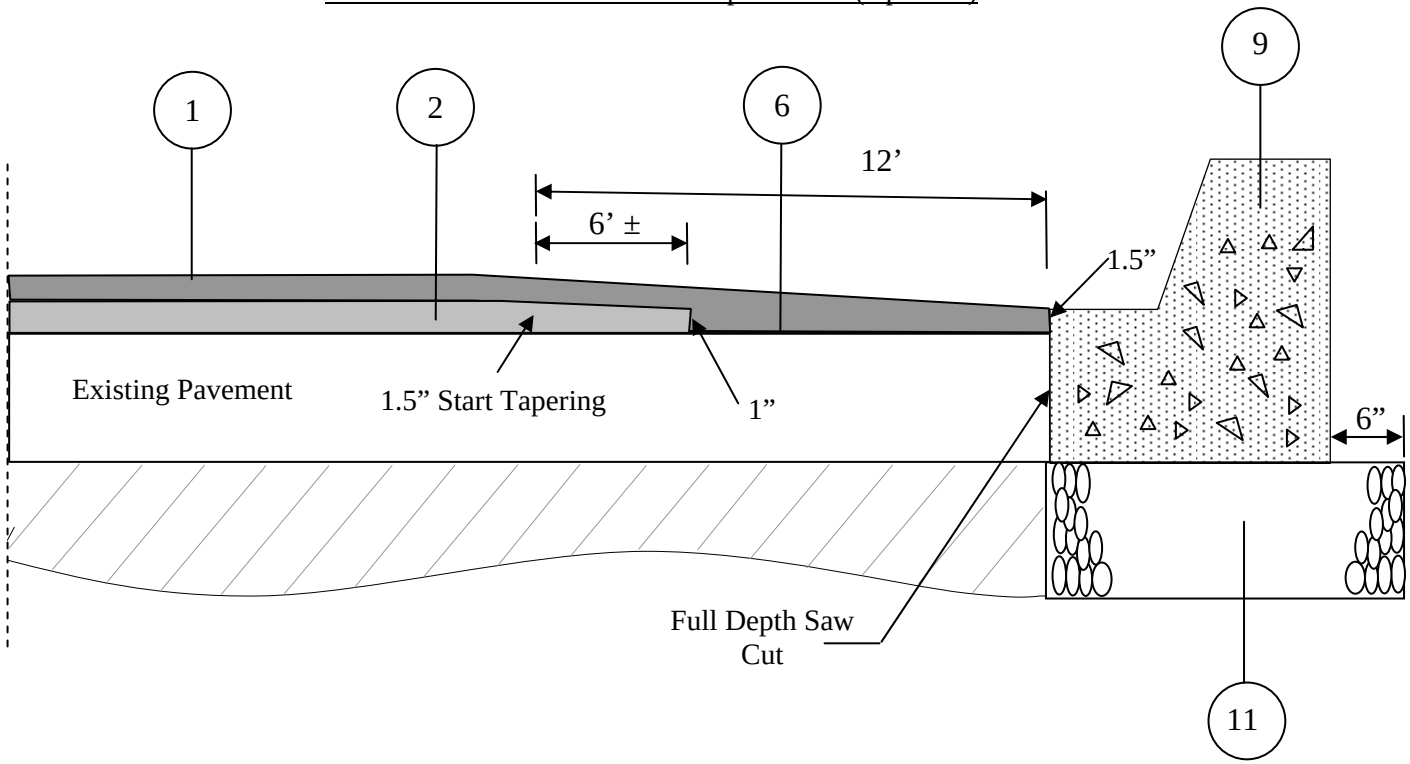
Pavement Section

MD 187 – New Curb & Gutter Replacement (Option 2)



SCALE : NONE	DRAWN BY: RRR	APPROVED BY: GMH

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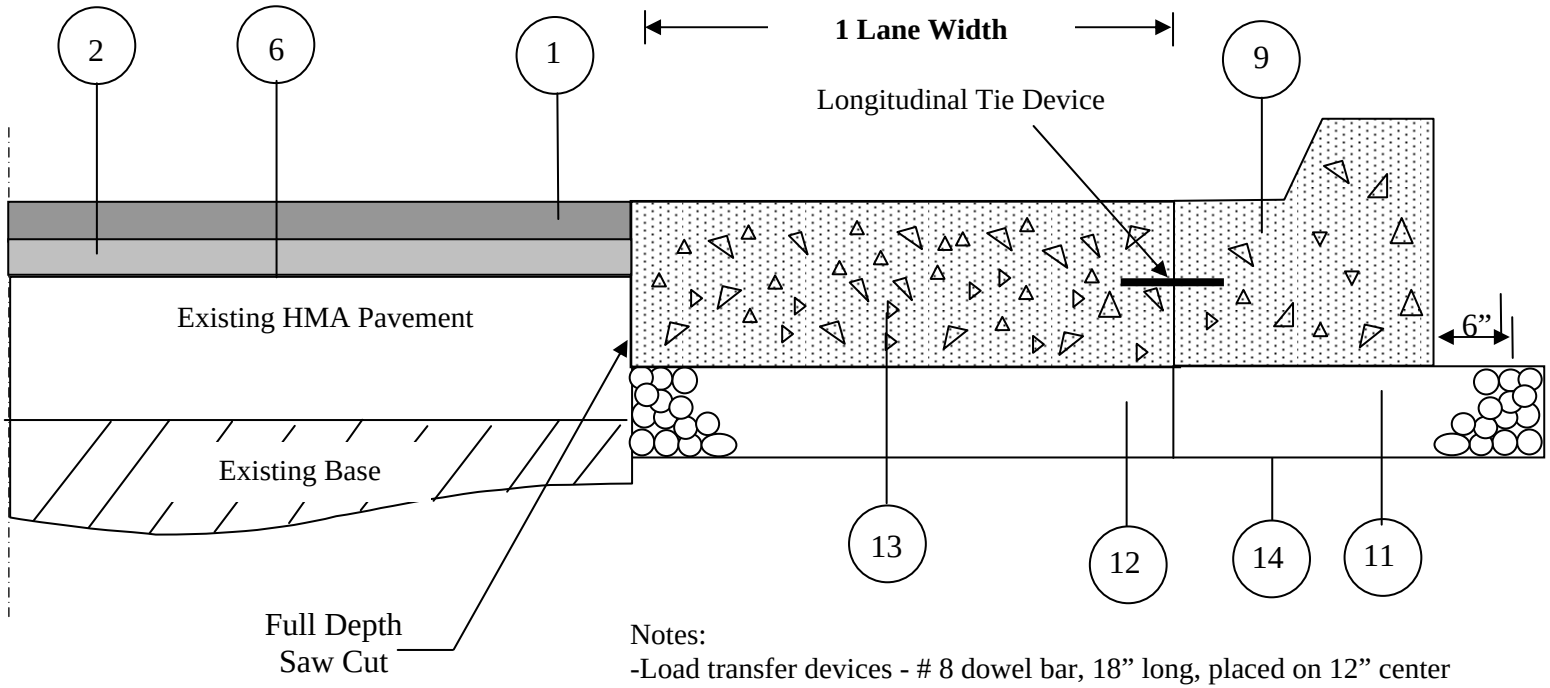
Pavement Section

MD 187 – PCC Bus Pad, Grinding, and Resurfacing



Notes:
-Load transfer devices - # 8 dowel bar, 18” long, placed on 12” center
-Longitudinal tie devices (at longitudinal joints and slab/curb interfaces) - # 4 “J” bar, 14” long, placed on 36” center. Maximum Joint Spacing 15 ft.
-PCC bus pad dimension: 80’ to 100’ long by one lane wide

SCALE : NONE	DRAWN BY: RRR	APPROVED BY: GMH

CATEGORY 3
STANDARD TYPE S INLET WITH CURVED VANE GRATE, DOUBLE GRATE - MINIMUM DEPTH

Station	Alignment	Offset	Location/Description	EA
5+88	MD 187	Right	Replace existing Inlet	1
5+88	MD 187	Left	Replace existing Inlet	1
7+77	MD 187	Left	Replace existing Inlet	1
9+85	MD 187	Right	Replace existing Inlet	1
9+85	MD 187	Left	Replace existing Inlet	1
11+20	MD 187	Right	Replace existing Inlet	1
11+70	MD 187	Right	Replace existing Inlet	1
13+50	MD 187	Right	Replace existing Inlet	1
18+95	MD 187	Right	Replace existing Inlet	1
19+06	MD 187	Left	Replace existing Inlet	1
22+06	MD 187	Left	Replace existing Inlet	1
22+92	MD 187	Left	Replace existing Inlet	1
25+46	MD 187	Right	Replace existing Inlet	1
25+46	MD 187	Left	Replace existing Inlet	1
34+34	MD 187	Right	Replace existing Inlet	1
34+48	MD 187	Left	Replace existing Inlet	1
37+35	MD 187	Right	Replace existing Inlet	1
39+24	MD 187	Left	Replace existing Inlet	1
39+30	MD 187	Right	Replace existing Inlet	1
39+90	MD 187	Right	Replace existing Inlet	1
40+30	MD 187	Left	Replace existing Inlet	1
44+30	MD 187	Left	Replace existing Inlet	1
44+50	MD 187	Right	Replace existing Inlet	1
44+50	MD 187	Right	Replace existing Inlet	1
			Quantity	**24**

MODIFIED MIX 6 CONCRETE FOR MISCELLANEOUS STRUCTURES

Station	Alignment	Offset	Location/Description	C.Y.
5+88	MD 187	Right	Concrete collar at new inlet	.6
5+88	MD 187	Left	Concrete collar at new inlet	.6
7+77	MD 187	Left	Concrete collar at new inlet	.6
7+77	MD 187	Right	Concrete collar at new inlet	.6
9+85	MD 187	Right	Concrete collar at new inlet	.6
9+85	MD 187	Left	Concrete collar at new inlet	.6
11+20	MD 187	Right	Concrete collar at new inlet	.6
11+70	MD 187	Left	Concrete collar at new inlet	.6
11+70	MD 187	Right	Concrete collar at new inlet	.6
13+50	MD 187	Right	Concrete collar at new inlet	.6
13+72	MD 187	Left	Concrete collar at new inlet	.6

18+95	MD 187	Right	Concrete collar at new inlet	.6

CATEGORY 3
MODIFIED MIX 6 CONCRETE FOR MISCELLANEOUS STRUCTURES

Station	Alignment	Offset	Location/Description	C.Y.
19+06	MD 187	Left	Concrete collar at new inlet	.6
21+66	MD 187	Left	Concrete collar at new inlet	.6
22+06	MD 187	Left	Concrete collar at new inlet	.6
22+72	MD 187	Right	Concrete collar at new inlet	.6
22+92	MD 187	Left	Concrete collar at new inlet	.6
25+46	MD 187	Right	Concrete collar at new inlet	.6
25+46	MD 187	Left	Concrete collar at new inlet	.6
34+34	MD 187	Right	Concrete collar at new inlet	.6
34+48	MD 187	Left	Concrete collar at new inlet	.6
37+35	MD 187	Right	Concrete collar at new inlet	.6
37+65	MD 187	Left	Concrete collar at new inlet	.6
39+24	MD 187	Left	Concrete collar at new inlet	.6
39+30	MD 187	Right	Concrete collar at new inlet	.6
39+90	MD 187	Right	Concrete collar at new inlet	.6
40+30	MD 187	Left	Concrete collar at new inlet	.6
44+30	MD 187	Left	Concrete collar at new inlet	.6
44+50	MD 187	Right	Concrete collar at new inlet	.6
44+50	MD 187	Right	Concrete collar at new inlet	.6
			Quantity	**18**

STANDARD TYPE S COMINATION INLET WITH CURVED VANE GRATE, DOUBLE GRATE - MINIMUM DEPTH

Station	Alignment	Offset	Location/Description	EA
7+77	MD 187	Right	Replace existing Inlet	1
11+70	MD 187	Left	Replace existing Inlet	1
13+72	MD 187	Left	Replace existing Inlet	1
21+66	MD 187	Left	Replace existing Inlet	1
22+72	MD 187	Right	Replace existing Inlet	1
37+65	MD 187	Left	Replace existing Inlet	1
			Quantity	**6**

Category 5

MONOLITHIC CONCRETE MEDIAN 4'-0" WIDE A-1

Category 5 – Table 1 **Station**	**Station**	**Alignment**	**Description**	**LF**
20+07	20+12	MD 187	Repair median	5
22+30	22+40	MD 187	Repair median	10
			Quantity	**15**

CATEGORY 2

CLASS 2 EXCAVATION

Station	Alignment	Offset	Location/Description	CY
11+30	MD 187	Lt.	Remove ex. sidewalk ramp	2
19+40	MD 187	Lt.	Remove ex. sidewalk ramp	1
19+40	MD 187	Rt.	Remove ex. sidewalk ramp	1
19+80	MD 187	Rt.	Remove ex. sidewalk ramp	2
22+35	MD 187	Lt.	Remove ex. sidewalk ramp	2
30+60	MD 187	Lt.	Remove ex. sidewalk ramp	2
30+75	MD 187	Rt.	Remove ex. sidewalk ramp	5
31+50	MD 187	Rt.	Remove ex. sidewalk ramp	9
			Quantity	**25**

CATEGORY 6

STANDARD TYPE A COMBINATION CURB AND GUTTER
12 INCH GUTTER PAN 8 INCH DEPTH

MODIFIED MIX 6 CONCRETE FOR MISCELLANEOUS STRUCTURES

Station	Station	Offset	Location/Description	L.F.
2+30	2+50	Right	Replace curb & gutter at ramp	20
2+92	3+10	Right	Replace curb & gutter at ramp	20
4+08	4+28	Right	Replace curb & gutter at ramp	20
4+70	4+90	Right	Replace curb & gutter at ramp	20
5+80	5+95	Left	Replace curb & gutter at inlet	15
5+81	5+96	Right	Replace curb & gutter at inlet	15
5+96	6+14	Right	Replace curb & gutter at ramp	30
6+10	6+17	Left	Replace curb & gutter at ramp	12
6+48	6+61	Right	Replace curb & gutter at ramp	22
6+48	6+61	Left	Replace curb & gutter at ramp	22
7+70	7+85	Left	Replace curb & gutter at inlet	15
7+70	7+85	Right	Replace curb & gutter at inlet	15
9+78	10+02	Left	Replace curb & gutter at inlet	23
9+80	10+00	Right	Replace curb & gutter at inlet	20
10+00	10+56	Right	Replace curb & gutter at ramp	65
10+02	10+38	Left	Replace curb & gutter at ramp	45
11+00	11+32	Right	Replace curb & gutter at inlet/ramp	35
11+24	11+29	Left	Replace curb & gutter at ramp	18
11+63	11+78	Left	Replace curb & gutter at inlet	15
11+63	11+78	Right	Replace curb & gutter at inlet	15
13+40	13+55	Right	Replace curb & gutter at inlet	15
13+65	13+80	Left	Replace curb & gutter at inlet	15
18+88	19+03	Right	Replace curb & gutter at inlet	15
18+99	19+14	Left	Replace curb & gutter at inlet	15
19+29	19+42	Left	Replace curb & gutter at ramp	20
19+36	19+46	Right	Replace curb & gutter at ramp	20
19+76	19+86	Left	Replace curb & gutter at ramp	20
19+80	19+90	Right	Replace curb & gutter at ramp	20
21+60	21+75	Right	Replace curb & gutter at inlet	15
			Subtotal This Sheet	617

CATEGORY 6

STANDARD TYPE A COMBINATION CURB AND GUTTER
12 INCH GUTTER PAN 8 INCH DEPTH

MODIFIED MIX 6 CONCRETE FOR MISCELLANEOUS STRUCTURES				
Station	**Station**	**Offset**	**Location/Description**	**L.F.**
21+75	21+92	Right	Replace curb & gutter at ramp	22
21+98	22+13	Left	Replace curb & gutter at inlet	15
22+24	22+33	Left	Replace curb & gutter at ramp	20
22+32	22+45	Right	Replace curb & gutter at ramp	16
22+60	22+75	Right	Replace curb & gutter at inlet	15
22+86	23+01	Left	Replace curb & gutter at inlet	15
24+53	24+84	Left	Replace curb & gutter at ramp	42
24+54	24+82	Right	Replace curb & gutter at ramp	35
25+14	25+52	Right	Replace curb & gutter at inlet/ramp	42
25+20	25+56	Left	Replace curb & gutter at inlet/ramp	46
30+36	30+73	Right	Replace curb & gutter at ramp	50
30+50	30+75	Left	Replace curb & gutter at ramp	42
31+12	31+25	Left	Replace curb & gutter at ramp	30
31+44	31+56	Right	Replace curb & gutter at ramp	13
34+27	34+42	Right	Replace curb & gutter at inlet	15
34+39	34+54	Left	Replace curb & gutter at inlet	15
37+25	37+40	Right	Replace curb & gutter at inlet	15
37+57	37+72	Left	Replace curb & gutter at inlet	15
39+16	39+31	Left	Replace curb & gutter at inlet	15
39+21	39+36	Right	Replace curb & gutter at inlet	15
39+80	39+95	Right	Replace curb & gutter at inlet	15
40+22	40+37	Left	Replace curb & gutter at inlet	15
43+55	43+70	Left	Replace curb & gutter at ramp	16
44+10	44+22	Left	Replace curb & gutter at ramp	16
44+22	44+37	Left	Replace curb & gutter at inlet	15
44+45	44+60	Left	Replace curb & gutter at inlet	15
			Proposed Quantity	**1,250**

CATEGORY 6

5 INCH CONCRETE SIDEWALK

Station	Station	Offset	Location/Description	S.F.
2+30	2+50	Right	New sidewalk ramp	80
2+92	3+10	Right	New sidewalk ramp	75
4+08	4+28	Right	New sidewalk ramp	85
4+70	4+90	Right	New sidewalk ramp	85
5+81	5+96	Right	New sidewalk at inlet	77
5+96	6+14	Right	New sidewalk ramp	140
6+10	6+17	Left	New sidewalk ramp	50
6+48	6+61	Right	New sidewalk ramp	160
6+48	6+61	Left	New sidewalk ramp	100
7+70	7+85	Left	New sidewalk at inlet	75
7+70	7+85	Right	New sidewalk at inlet	75
9+78	10+02	Left	New sidewalk at inlet	100
9+80	10+00	Right	New sidewalk at inlet	100
10+00	10+56	Right	New sidewalk ramp	350
10+02	10+38	Left	New sidewalk ramp	200
11+00	11+32	Right	New sidewalk at inlet/ramp	130
11+24	11+29	Left	New sidewalk ramp	150
11+63	11+78	Right	New sidewalk at inlet	15
13+40	13+55	Right	New sidewalk at inlet	75
13+65	13+80	Left	New sidewalk at inlet	75
18+88	19+03	Right	New sidewalk at inlet	75
18+99	19+14	Left	New sidewalk at inlet	75
19+29	19+42	Left	New sidewalk ramp	80
19+36	19+46	Right	New sidewalk ramp	85
19+76	19+86	Left	New sidewalk ramp	90
19+80	19+90	Right	New sidewalk ramp	80
21+60	21+75	Right	New sidewalk at inlet	75
			Subtotal This Sheet	2,757

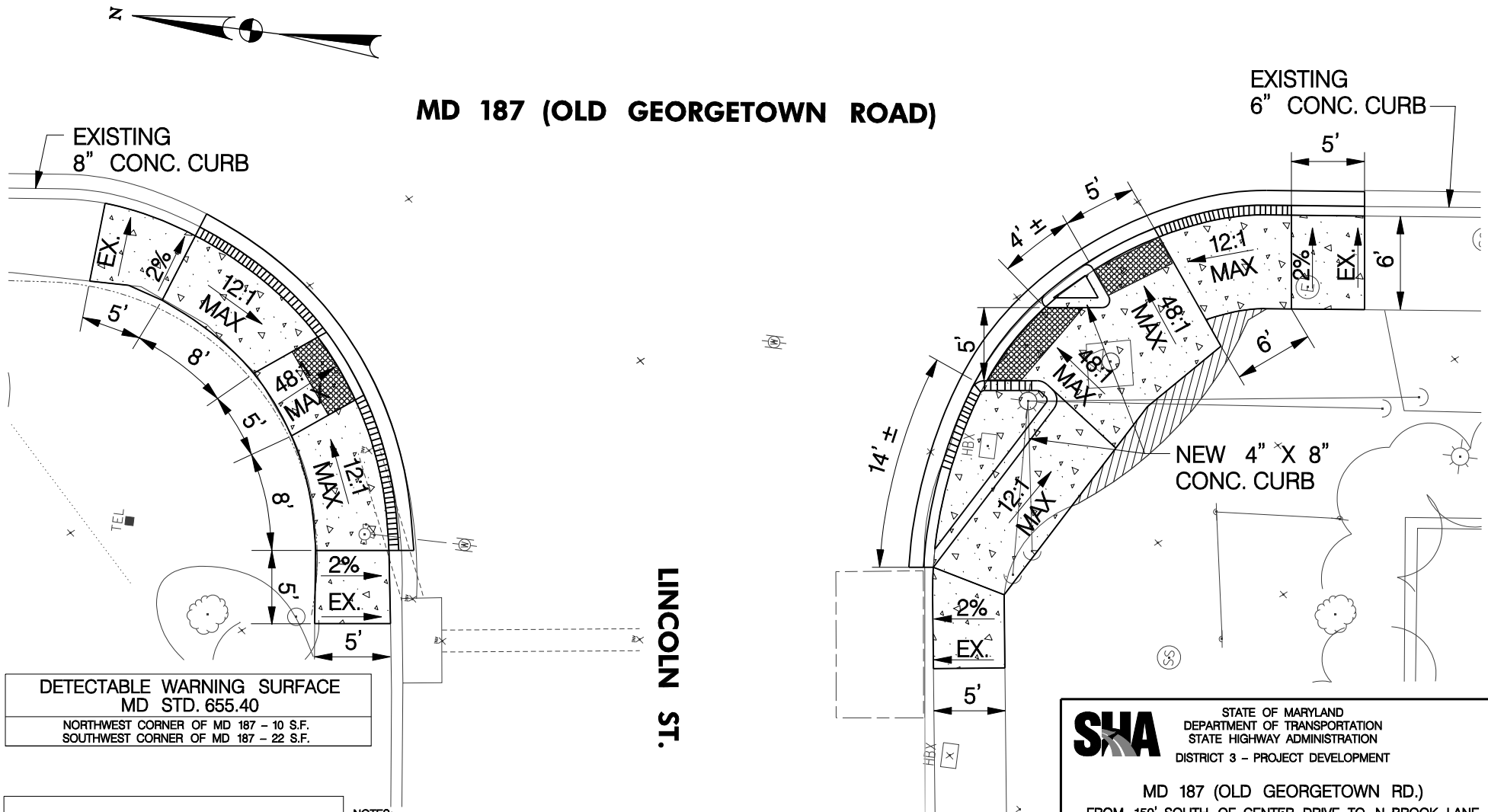
CATEGORY 6

5 INCH CONCRETE SIDEWALK				
Station	**Station**	**Offset**	**Location/Description**	**S.F.**
21+75	21+92	Right	New sidewalk ramp	80
21+98	22+13	Right	New sidewalk at inlet	75
22+24	22+33	Left	New sidewalk ramp	85
22+32	22+45	Right	New sidewalk ramp	140
22+60	22+75	Right	New sidewalk at inlet	75
22+86	23+01	Left	New sidewalk at inlet	75
24+53	24+84	Left	New sidewalk ramp	90
24+54	24+82	Right	New sidewalk ramp	205
25+14	25+52	Right	New sidewalk at inlet/ramp	200
25+20	25+56	Left	New sidewalk at inlet/ramp	280
30+36	30+73	Right	New sidewalk ramp	225
30+50	30+75	Left	New sidewalk ramp	300
31+12	31+25	Left	New sidewalk ramp	170
31+44	31+56	Right	New sidewalk ramp	140
34+27	34+42	Right	New sidewalk at inlet	75
34+39	34+54	Left	New sidewalk at inlet	75
37+25	37+40	Right	New sidewalk at inlet	75
37+57	37+72	Left	New sidewalk at inlet	75
39+16	39+31	Left	New sidewalk at inlet	75
39+21	39+36	Right	New sidewalk at inlet	75
39+80	39+95	Right	New sidewalk at inlet	75
40+22	40+37	Left	New sidewalk at inlet	75
43+55	43+70	Left	New sidewalk ramp	80
44+10	44+22	Left	New sidewalk ramp	80
44+22	44+37	Left	New sidewalk at inlet	75
44+45	44+60	Left	New sidewalk at inlet	75
			Proposed Quantity	**5,810**

CATEGORY 6

DETECTABLE WARNING SURFACE FOR CURB RAMPS

Category 6 Station	Station	Alignment	Offset	Location/Description	S.F.
2+40	---	MD 187	Right	Sidewalk ramp	12
3+00	---	MD 187	Right	Sidewalk ramp	12
4+15	---	MD 187	Right	Sidewalk ramp	12
4+75	---	MD 187	Right	Sidewalk ramp	12
6+12	---	MD 187	Left & Right	Sidewalk ramp	26
6+50	---	MD 187	Left & Right	Sidewalk ramp	28
10+12	---	MD 187	Left & Right	Sidewalk ramp	20
10+30	---	MD 187	Left	Sidewalk ramp	12
10+47	---	MD 187	Right	Sidewalk ramp	12
11+07	---	MD 187	Right	Sidewalk ramp	18
11+28	---	MD 187	Left	Sidewalk ramp	10
19+36	---	MD 187	Left	Sidewalk ramp	12
19+40	---	MD 187	Right	Sidewalk ramp	12
19+82	---	MD 187	Left & Right	Sidewalk ramp	24
21+85	---	MD 187	Right	Sidewalk ramp	12
22+25	---	MD 187	Left	Sidewalk ramp	12
22+35	---	MD 187	Right	Sidewalk ramp	12
22+75	---	MD 187	Left	Sidewalk ramp	12
24+65	---	MD 187	Left & Right	Sidewalk ramp	20
24+78	---	MD 187	Left & Right	Sidewalk ramp	20
25+27	---	MD 187	Left & Right	Sidewalk ramp	24
30+50	---	MD 187	Right	Sidewalk ramp	12
30+60	---	MD 187	Left & Right	Sidewalk ramp	20
30+77	---	MD 187	Left	Sidewalk ramp	13
31+18	---	MD 187	Left	Sidewalk ramp	10
31+43	---	MD 187	Right	Sidewalk ramp	10
34+72	---	MD 187	Left	Sidewalk ramp	12
35+10	---	MD 187	Left	Sidewalk ramp	12
43+63	---	MD 187	Left	Sidewalk ramp	13
44+15	---	MD 187	Left	Sidewalk ramp	12
				Proposed Quantity	**460**



DETECTABLE WARNING SURFACE MD STD. 655.40
NORTHWEST CORNER OF MD 187 – 10 S.F. SOUTHWEST CORNER OF MD 187 – 22 S.F.

LEGEND

- REMOVE EXISTING SIDEWALK – TO BE PAID FOR AS CLASS 2 EXCAVATION
- SIDEWALK RECONSTRUCTION
- TAPERED CURB

NOTES:

1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.11 AND MD.655.12.
2. SEDIMENT AND EROSION CONTROL REGULATIONS WILL BE STRICTLY ENFORCED DURING CONSTRUCTION.
3. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED AT THE END OF THE WORK DAY UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
4. 4" x 8" CONC. CURB WILL BE PAID FOR AS "STANDARD TYPE A COMBINATION CURB AND GUTTER 12 INCH GUTTER PAN, 8 INCH DEPTH.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

SHA

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

RAMP RECONSTRUCTION DETAIL

SCALE 1" = 10' DATE DECEMBER 2008 CONTRACT NO. MO4295168

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. DE 1 OF 9 SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:09 AM
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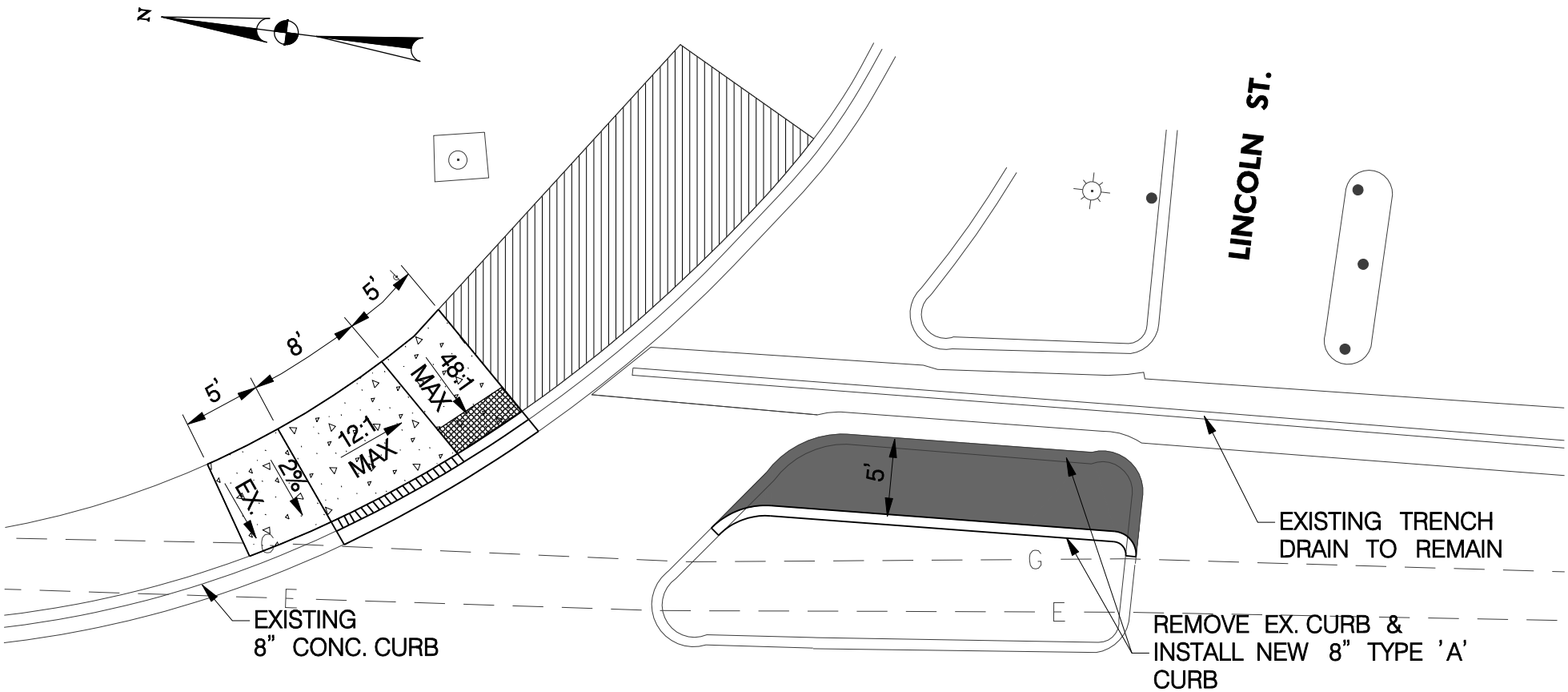

DETECTABLE WARNING SURFACE MD STD. 655.40
NORTHEAST CORNER OF MD 187 – 10 S.F.

MD 187 (OLD GEORGETOWN ROAD)

LEGEND

- REMOVE EXISTING SIDEWALK – TO BE PAID FOR AS CLASS 2 EXCAVATION
- SIDEWALK RECONSTRUCTION
- FULL DEPTH PAVING
- TAPERED CURB

NOTES:

1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. SEDIMENT AND EROSION CONTROL REGULATIONS WILL BE STRICTLY ENFORCED DURING CONSTRUCTION.
3. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED AT THE END OF THE WORK DAY UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
4. 8" TYPE 'A' CURB WILL BE PAID FOR AS "STANDARD TYPE A COMBINATION CURB AND GUTTER 12 INCH GUTTER PAN, 8 INCH DEPTH.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

SHA

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

RAMP RECONSTRUCTION DETAIL

SCALE 1" = 10' DATE DECEMBER 2008 CONTRACT NO. MO4295168

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. DE 2 OF 9 SHEET NO.

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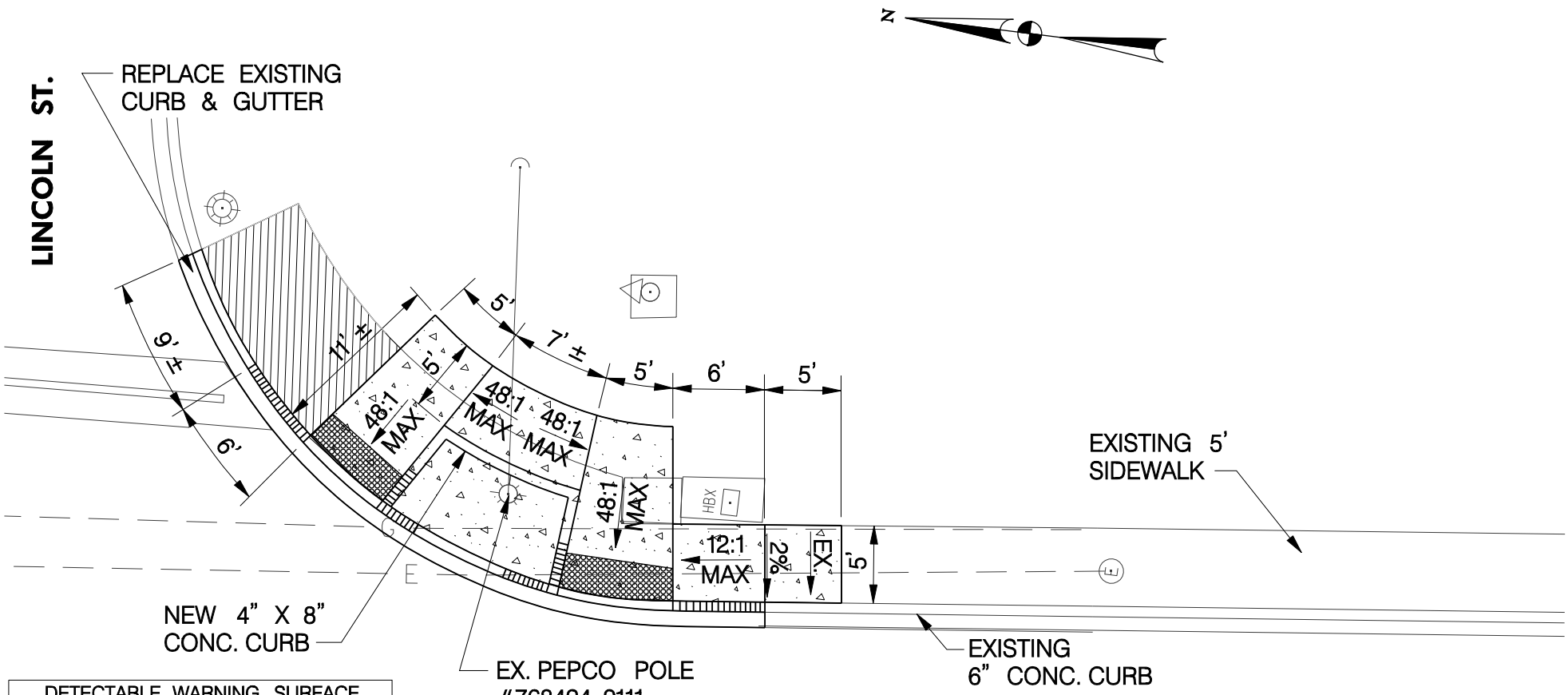

DETECTABLE WARNING SURFACE MD STD. 655.40
SOUTHEAST CORNER OF MD 187 – 28 S.F.

MD 187 (OLD GEORGETOWN ROAD)

LEGEND

- REMOVE EXISTING SIDEWALK – TO BE PAID FOR AS CLASS 2 EXCAVATION
- SIDEWALK RECONSTRUCTION
- TAPERED CURB

NOTES:

1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. SEDIMENT AND EROSION CONTROL REGULATIONS WILL BE STRICTLY ENFORCED DURING CONSTRUCTION.
3. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED AT THE END OF THE WORK DAY UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
4. 4" x 8" CONC. CURB WILL BE PAID FOR AS "STANDARD TYPE A COMBINATION CURB AND GUTTER 12 INCH GUTTER PAN, 8 INCH DEPTH.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

RAMP RECONSTRUCTION DETAIL

SCALE 1" = 10' DATE DECEMBER 2008 CONTRACT NO. MO4295168

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. DE 3 OF 9 SHEET NO.

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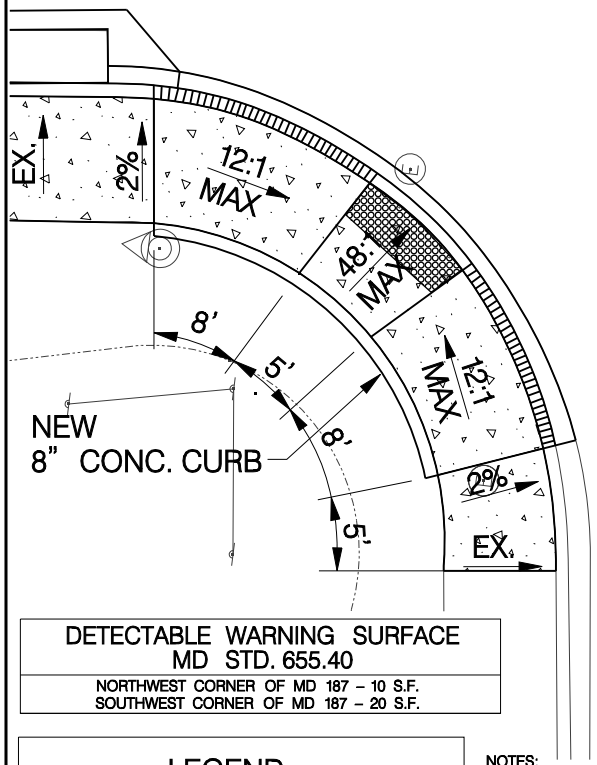
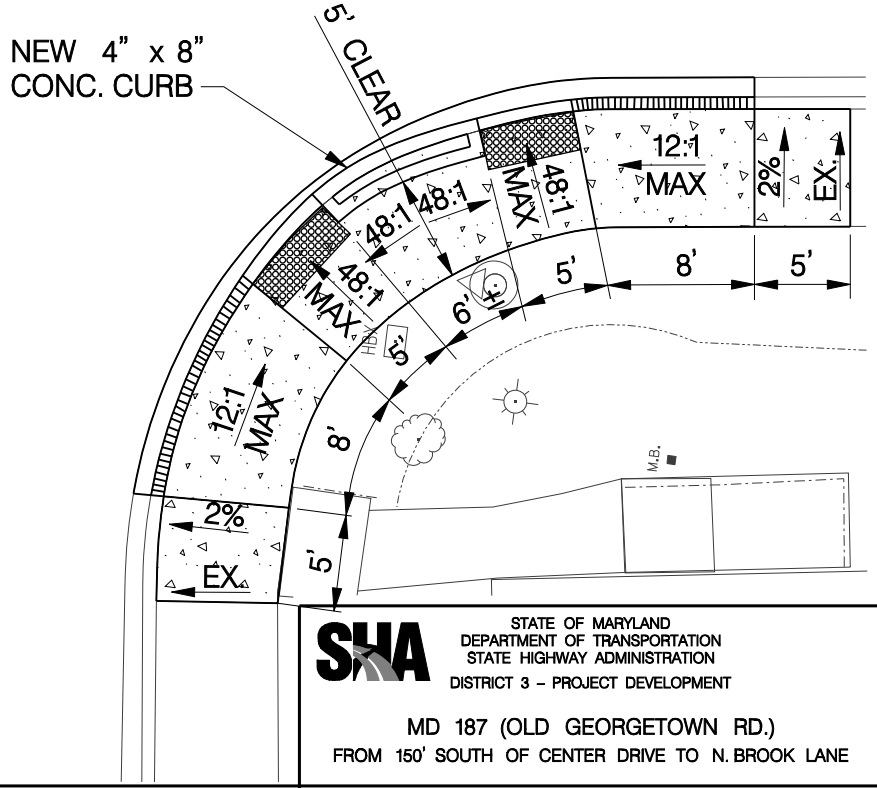
MD 187 (OLD GEORGETOWN ROAD)





McKINLEY ST.

DETECTABLE WARNING SURFACE MD STD. 655.40
NORTHWEST CORNER OF MD 187 – 10 S.F. SOUTHWEST CORNER OF MD 187 – 20 S.F.

LEGEND

- REMOVE EXISTING SIDEWALK – TO BE PAID FOR AS CLASS 2 EXCAVATION
- SIDEWALK RECONSTRUCTION
- TAPERED CURB

NOTES:

1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. SEDIMENT AND EROSION CONTROL REGULATIONS WILL BE STRICTLY ENFORCED DURING CONSTRUCTION.
3. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED AT THE END OF THE WORK DAY UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
4. 8" CONC. CURB WILL BE PAID FOR AS "STANDARD TYPE A COMBINATION CURB AND GUTTER 12 INCH GUTTER PAN, 8 INCH DEPTH.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

SHA

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

RAMP RECONSTRUCTION DETAIL

SCALE 1" =10' DATE DECEMBER 2008 CONTRACT NO. MO4295168

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. DE 4 OF 9 SHEET NO.

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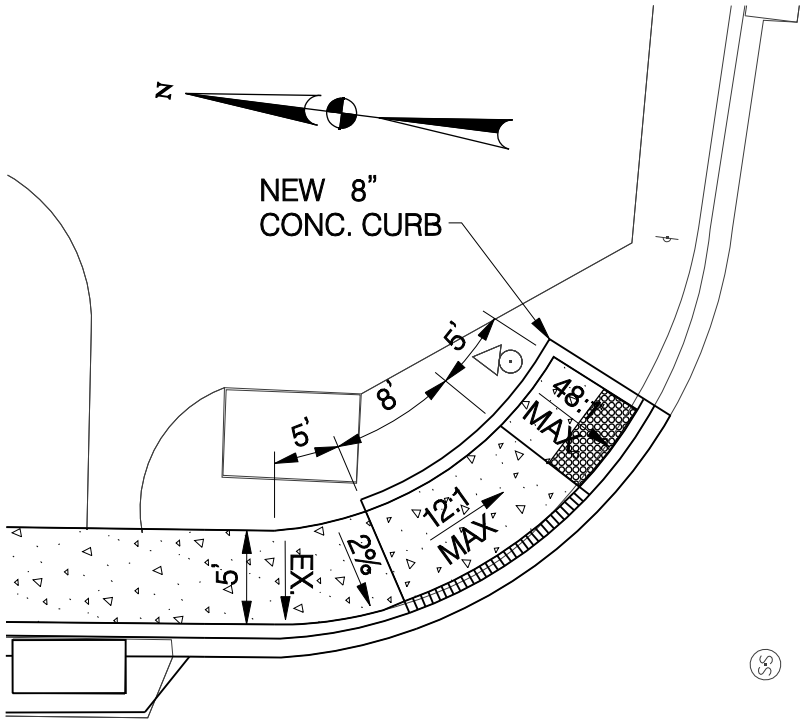
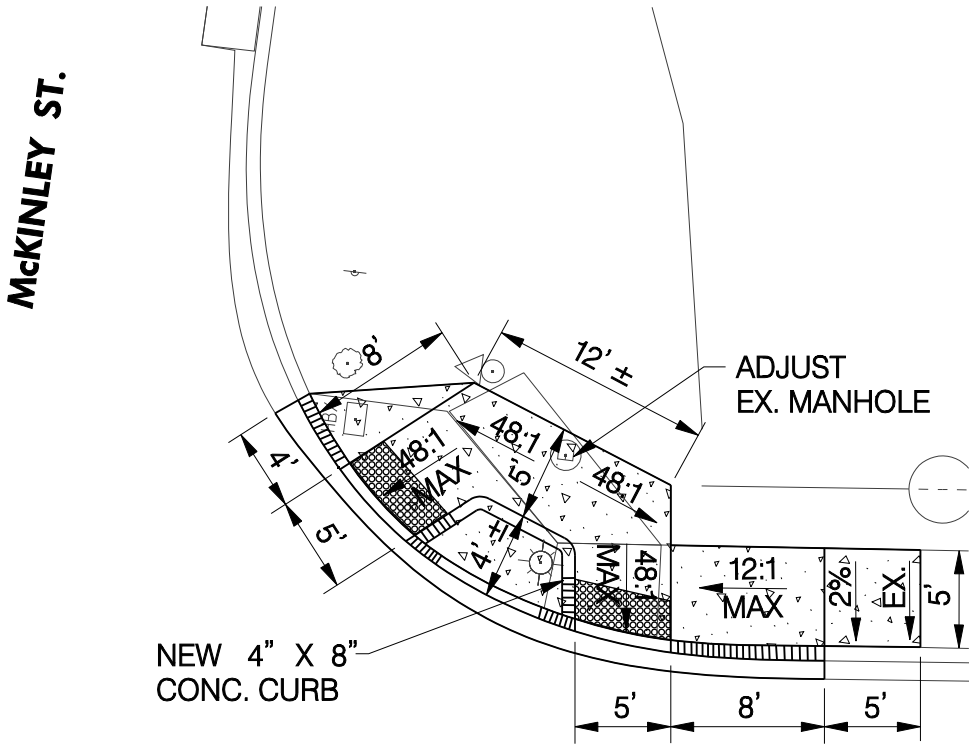




MD 187 (OLD GEORGETOWN ROAD)

DETECTABLE WARNING SURFACE MD STD. 655.40
NORTHEAST CORNER OF MD 187 – 10 S.F. SOUTHEAST CORNER OF MD 187 – 20 S.F.

LEGEND

- REMOVE EXISTING SIDEWALK – TO BE PAID FOR AS CLASS 2 EXCAVATION
- SIDEWALK RECONSTRUCTION
- TAPERED CURB

NOTES:

1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.11 AND MD.655.12.
2. SEDIMENT AND EROSION CONTROL REGULATIONS WILL BE STRICTLY ENFORCED DURING CONSTRUCTION.
3. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED AT THE END OF THE WORK DAY UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
4. 8" CONC. CURB WILL BE PAID FOR AS "STANDARD TYPE A COMBINATION CURB AND GUTTER 12 INCH GUTTER PAN, 8 INCH DEPTH.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

RAMP RECONSTRUCTION DETAIL

SCALE 1" =10' DATE DECEMBER 2008 CONTRACT NO. MO4295168

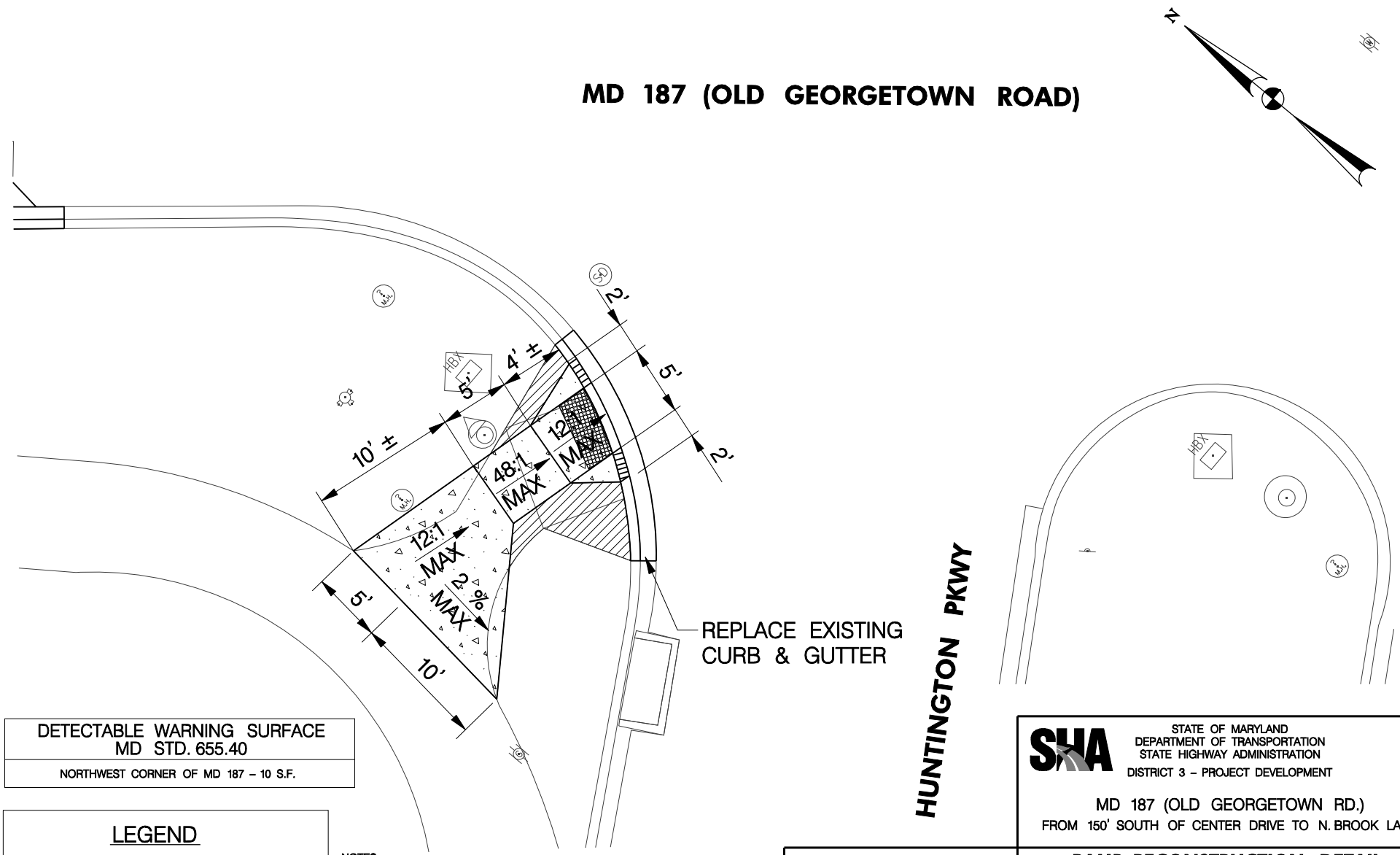
DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. DE 5 OF 9 SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:10 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHT-0005_ MD187.dgn

MD 187 (OLD GEORGETOWN ROAD)



DETECTABLE WARNING SURFACE MD STD. 655.40
NORTHWEST CORNER OF MD 187 – 10 S.F.

LEGEND

- REMOVE EXISTING SIDEWALK – TO BE PAID FOR AS CLASS 2 EXCAVATION
- SIDEWALK RECONSTRUCTION
- TAPERED CURB

NOTES:

1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. SEDIMENT AND EROSION CONTROL REGULATIONS WILL BE STRICTLY ENFORCED DURING CONSTRUCTION.
3. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED AT THE END OF THE WORK DAY UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

RAMP RECONSTRUCTION DETAIL

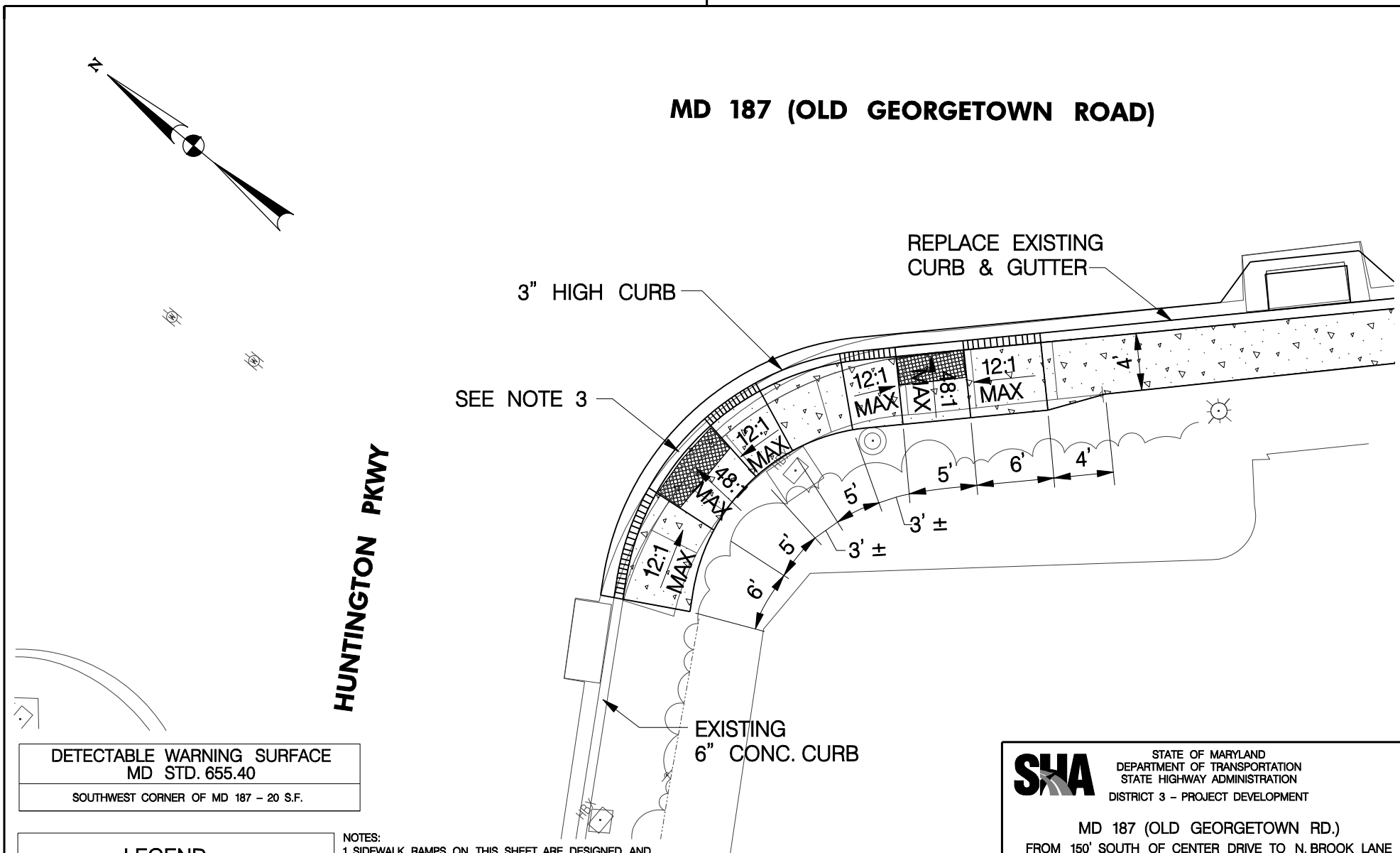
SCALE 1" = 10' DATE DECEMBER 2008 CONTRACT NO. MO4295168

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. DE 6 OF 9 SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:10 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHT-0006_ MD187.dgn



DETECTABLE WARNING SURFACE MD STD. 655.40
SOUTHWEST CORNER OF MD 187 – 20 S.F.

LEGEND

- REMOVE EXISTING SIDEWALK – TO BE PAID FOR AS CLASS 2 EXCAVATION
- SIDEWALK RECONSTRUCTION
- TAPERED CURB

NOTES:

1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. SEDIMENT AND EROSION CONTROL REGULATIONS WILL BE STRICTLY ENFORCED DURING CONSTRUCTION.
3. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED AT THE END OF THE WORK DAY UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
4. CONTRACTOR SHALL REBUILD EX. CURB AND GUTTER TO PROVIDE 5' CLEAR SIDEWALK WIDTH BETWEEN BACK OF CURB AND TRAFIIIC SIGNAL POLE FOUNDATION.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

RAMP RECONSTRUCTION DETAIL

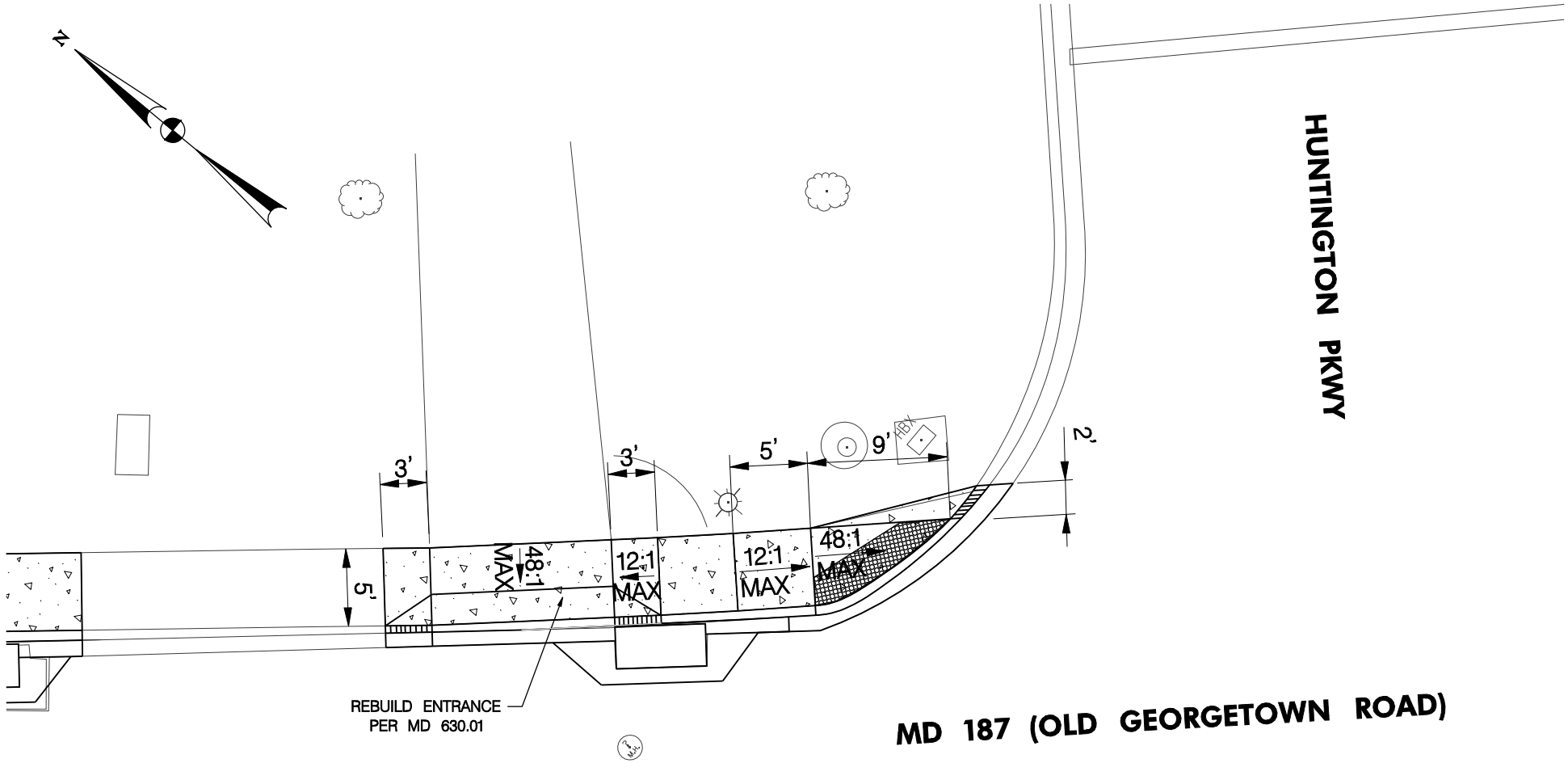
SCALE 1" = 10' DATE DECEMBER 2008 CONTRACT NO. MO4295168

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. DE 7 OF 9 SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:11 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHT-0007_ MD187.dgn



DETECTABLE WARNING SURFACE MD STD. 655.40
NORTHEAST CORNER OF MD 187 – 14 S.F.

LEGEND

- REMOVE EXISTING SIDEWALK – TO BE PAID FOR AS CLASS 2 EXCAVATION
- SIDEWALK RECONSTRUCTION
- TAPERED CURB

NOTES:

1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.11.
2. SEDIMENT AND EROSION CONTROL REGULATIONS WILL BE STRICTLY ENFORCED DURING CONSTRUCTION.
3. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED AT THE END OF THE WORK DAY UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

SHA

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

RAMP RECONSTRUCTION DETAIL

SCALE 1" = 10' DATE DECEMBER 2008 CONTRACT NO. MO4295168

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. DE 8 OF 9 SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 12:33 PM
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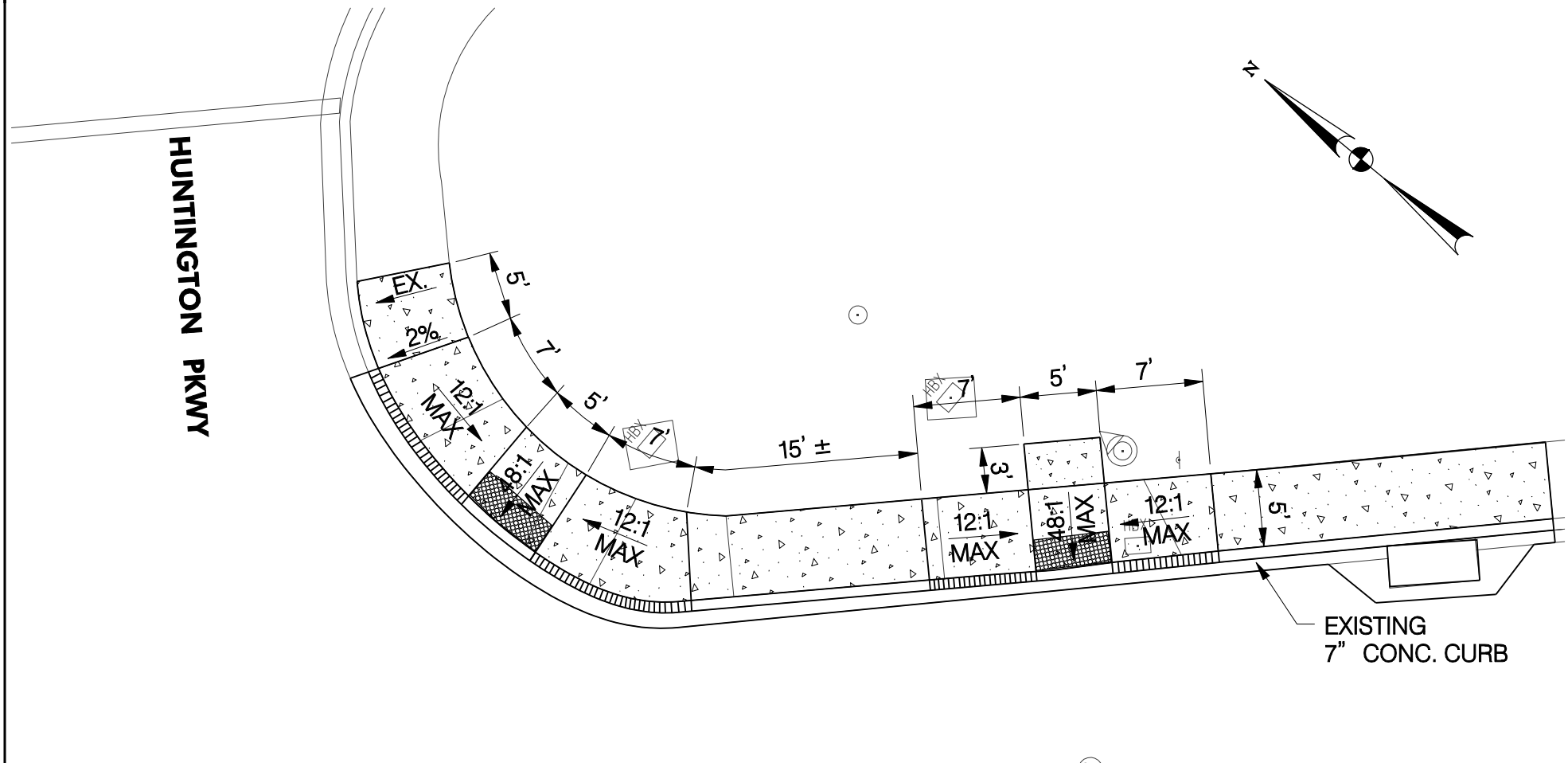


DETECTABLE WARNING SURFACE MD STD. 655.40
SOUTHEAST CORNER OF MD 187 – 20 S.F.

MD 187 (OLD GEORGETOWN ROAD)

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

LEGEND

- REMOVE EXISTING SIDEWALK – TO BE PAID FOR AS CLASS 2 EXCAVATION
- SIDEWALK RECONSTRUCTION
- TAPERED CURB

NOTES:
1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. SEDIMENT AND EROSION CONTROL REGULATIONS WILL BE STRICTLY ENFORCED DURING CONSTRUCTION.
3. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED AT THE END OF THE WORK DAY UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

RAMP RECONSTRUCTION DETAIL

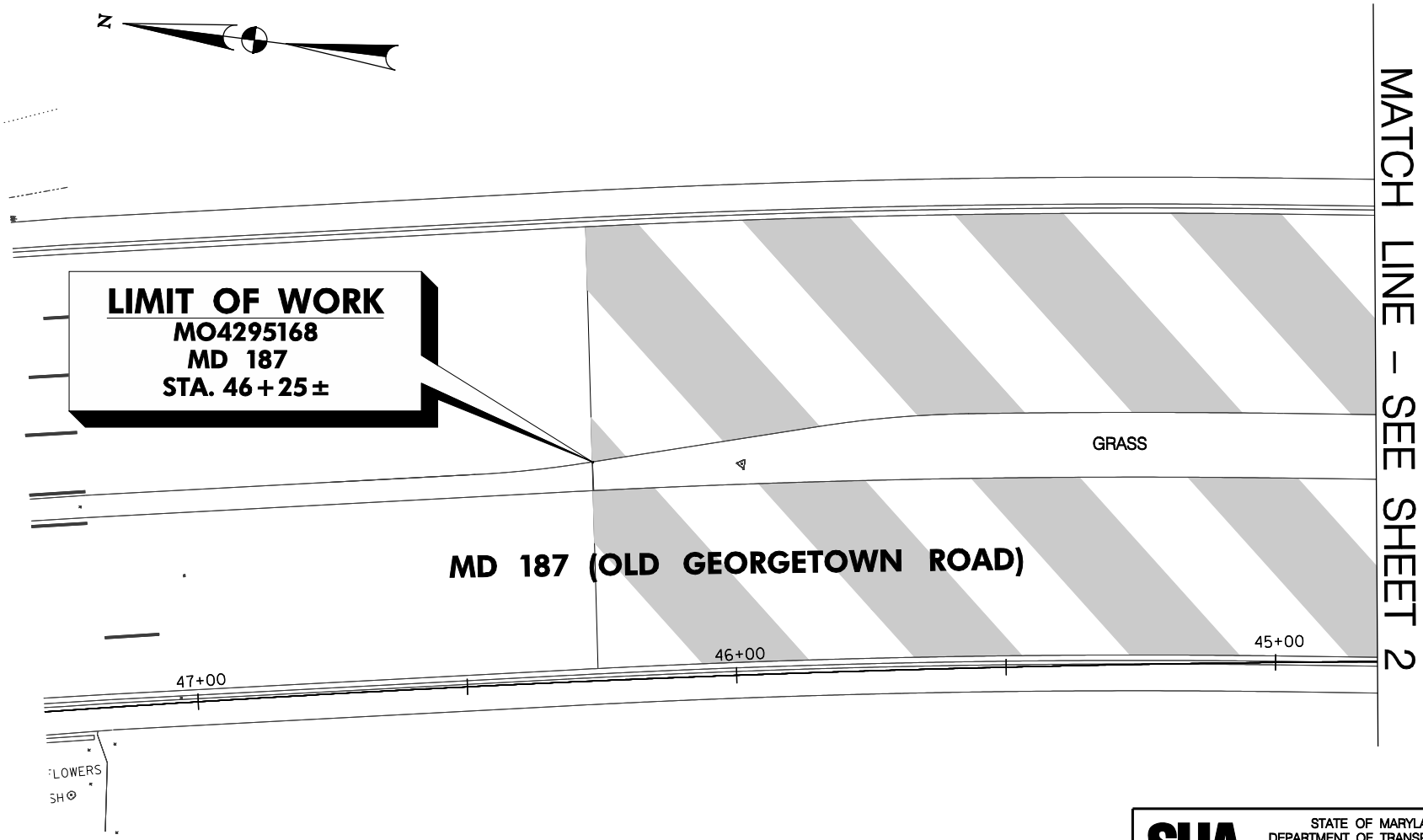
SCALE 1" = 10' DATE DECEMBER 2008 CONTRACT NO. MO4295168

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. DE 9 OF 9 SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:11 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHT-0009_ MD187.dgn



LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

NOTES:
1. SEDIMENT AND EROSION CONTROL REGULATIONS WILL BE STRICTLY ENFORCED DURING CONSTRUCTION.

2. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED AT THE END OF THE WORK DAY UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.

3. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.

4. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

SHA

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

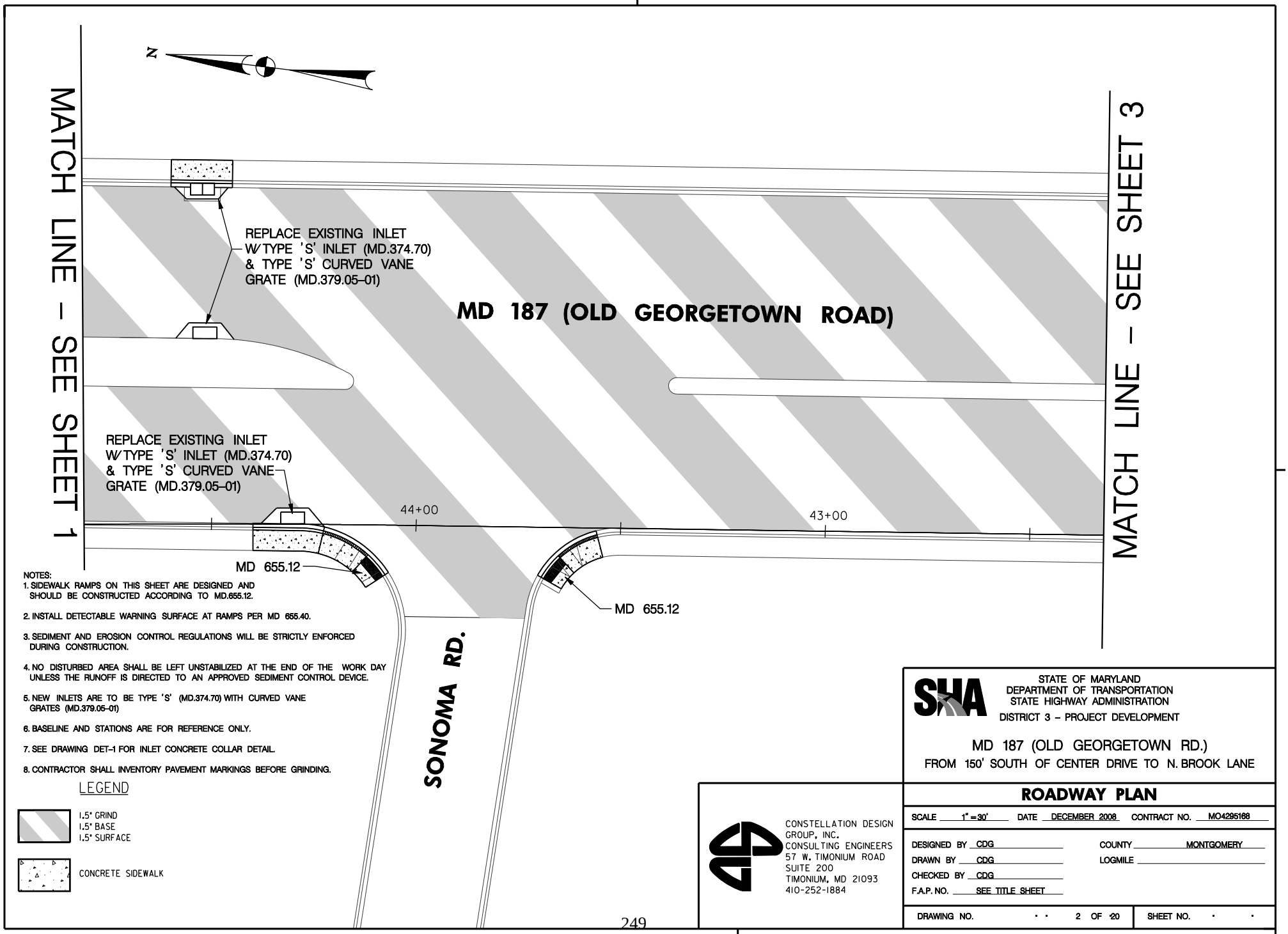
SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295168

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 1 OF 20 SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 12:30 PM
FILE: P:\03-06F (MD 187 Book Job)\Drawings\pHD-0001_ MD187.dgn



NOTES:
1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. INSTALL DETECTABLE WARNING SURFACE AT RAMPS PER MD 655.40.
3. SEDIMENT AND EROSION CONTROL REGULATIONS WILL BE STRICTLY ENFORCED DURING CONSTRUCTION.
4. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED AT THE END OF THE WORK DAY UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
5. NEW INLETS ARE TO BE TYPE 'S' (MD.374.70) WITH CURVED VANE GRATES (MD.379.05–01)
6. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
7. SEE DRAWING DET-1 FOR INLET CONCRETE COLLAR DETAIL.
8. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295168

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 2 OF 20 SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:02 AM
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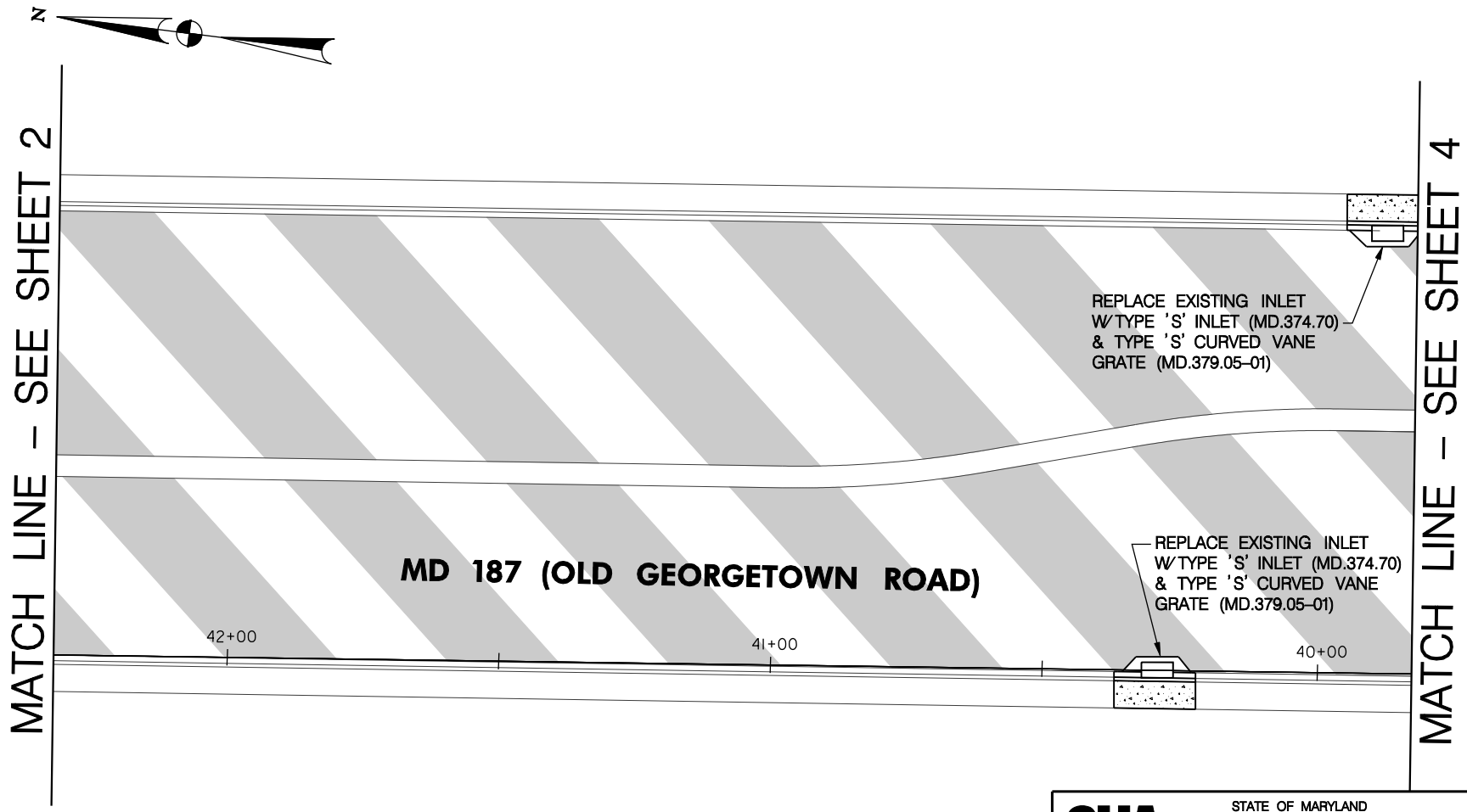


LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

NOTES:
1. SEDIMENT AND EROSION CONTROLS WILL BE STRICTLY ENFORCED DURING CONSTRUCTION.
2. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED AT THE END OF THE WORK DAY UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE
3. NEW INLETS ARE TO BE TYPE 'S' (MD.374.70) WITH CURVED VANE GRATES (MD.379.05-01)
4. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
5. SEE DRAWING DET-1 FOR INLET CONCRETE COLLAR DETAIL.
6. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 - PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

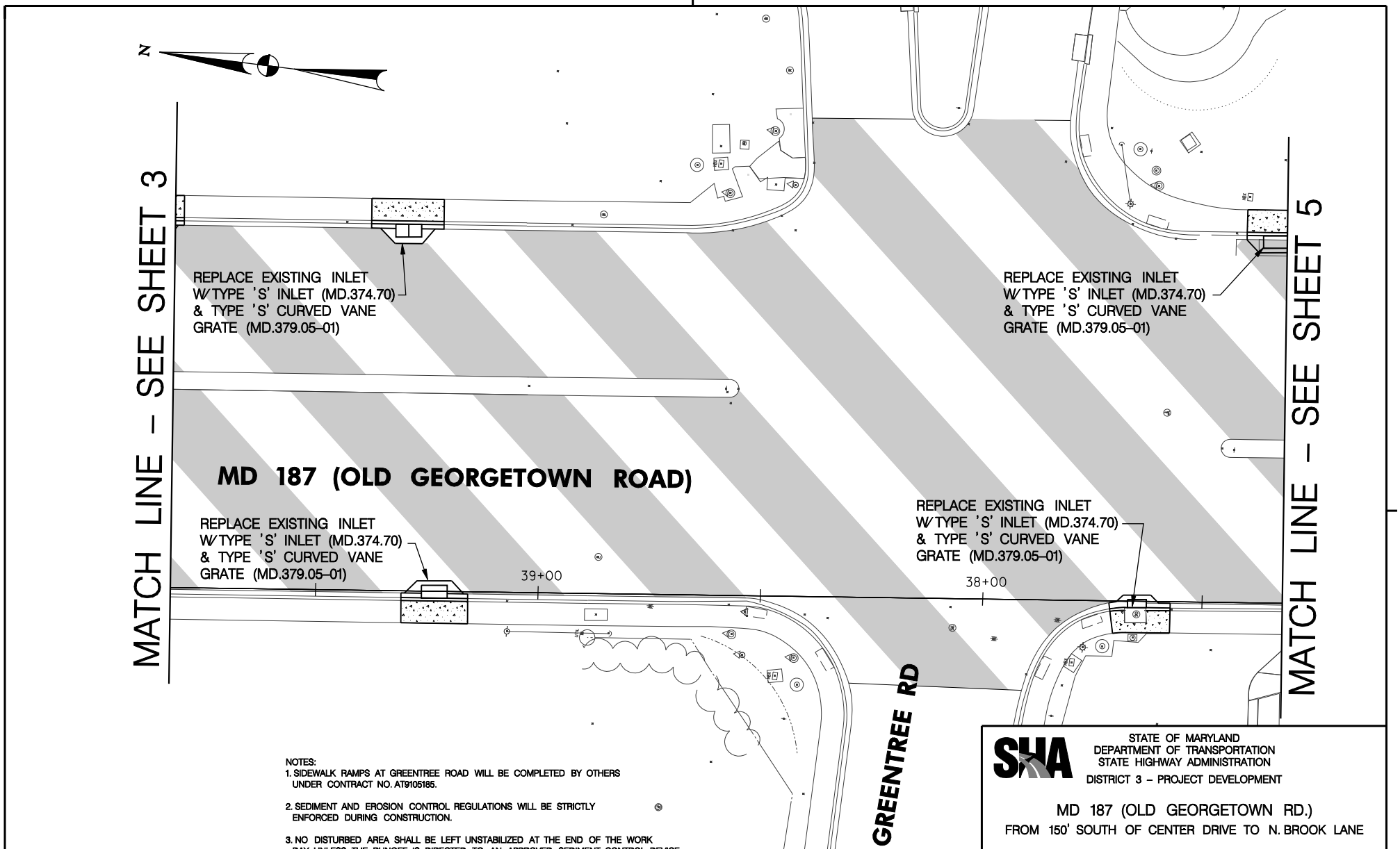
ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295168

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET
COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 3 OF 20
SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:03 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHD-0003_ MD187.dgn



NOTES:

1. SIDEWALK RAMPS AT GREENTREE ROAD WILL BE COMPLETED BY OTHERS UNDER CONTRACT NO. AT9105185.
2. SEDIMENT AND EROSION CONTROL REGULATIONS WILL BE STRICTLY ENFORCED DURING CONSTRUCTION.
3. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED AT THE END OF THE WORK DAY UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
4. NEW INLETS ARE TO BE TYPE 'S' (MD.374.70) WITH CURVED VANE GRATES (MD.379.05-01)
5. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
6. SEE DRAWING DET-1 FOR INLET CONCRETE COLLAR DETAIL.
7. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295168

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 4 OF 20 SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:03 AM
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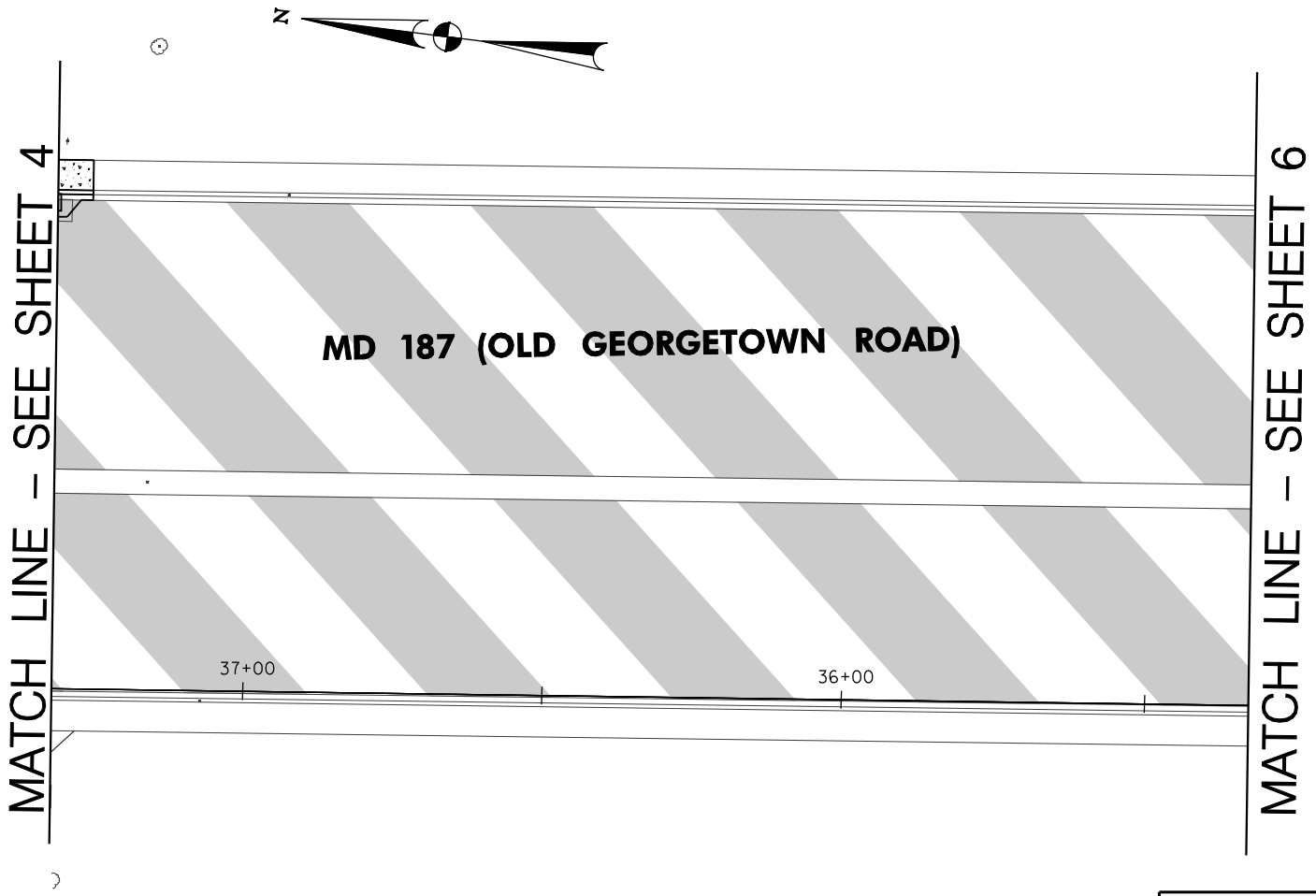

LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

NOTES:
1. SEDIMENT AND EROSION CONTROL REGULATIONS WILL BE STRICTLY ENFORCED DURING CONSTRUCTION.

2. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED AT THE END OF THE WORK DAY UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.

3. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.

4. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 - PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295168

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 5 OF 20 SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:03 AM
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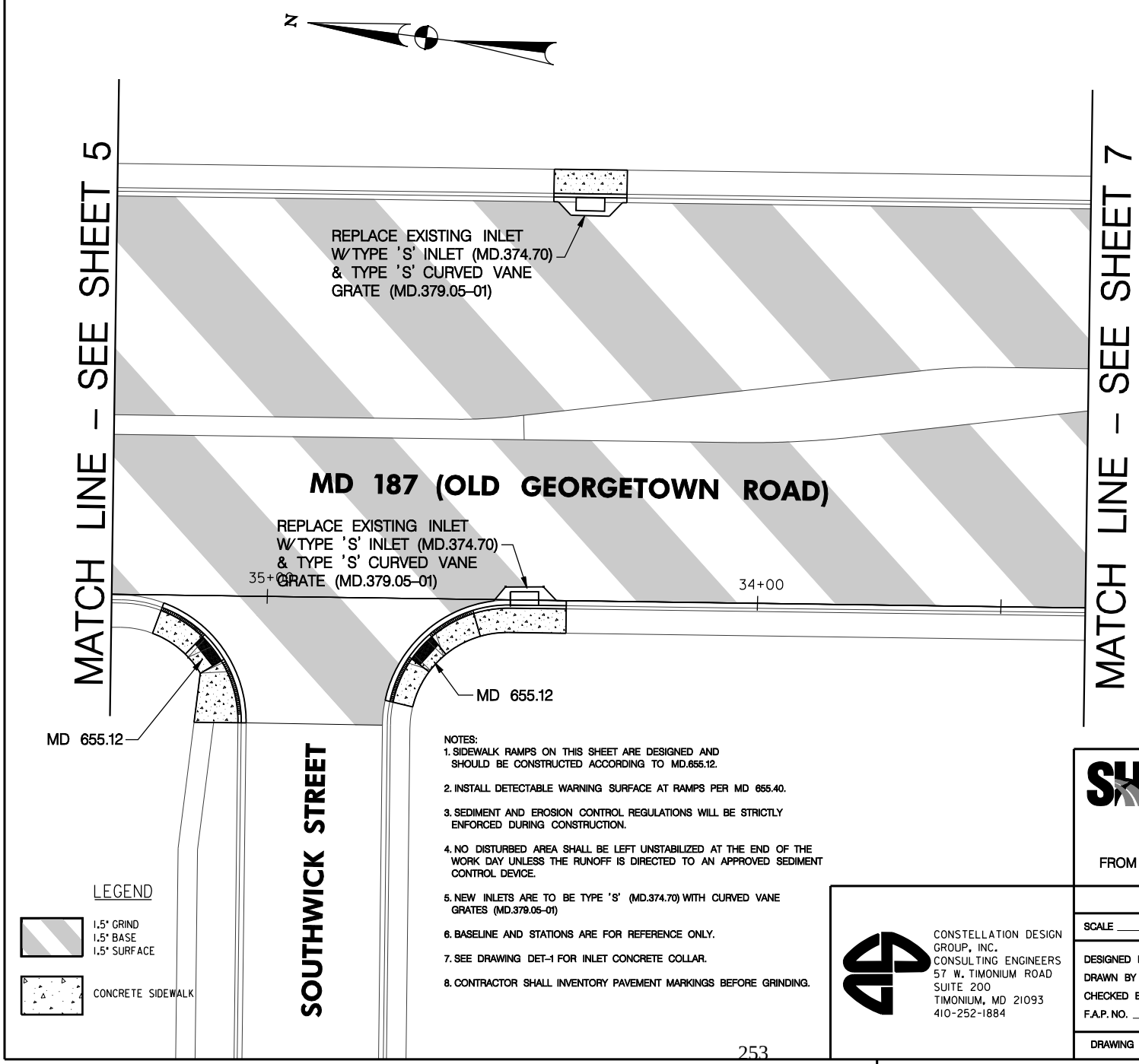


NOTES:

1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. INSTALL DETECTABLE WARNING SURFACE AT RAMPS PER MD 655.40.
3. SEDIMENT AND EROSION CONTROL REGULATIONS WILL BE STRICTLY ENFORCED DURING CONSTRUCTION.
4. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED AT THE END OF THE WORK DAY UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
5. NEW INLETS ARE TO BE TYPE 'S' (MD.374.70) WITH CURVED VANE GRATES (MD.379.05-01)
6. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
7. SEE DRAWING DET-1 FOR INLET CONCRETE COLLAR.
8. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295168

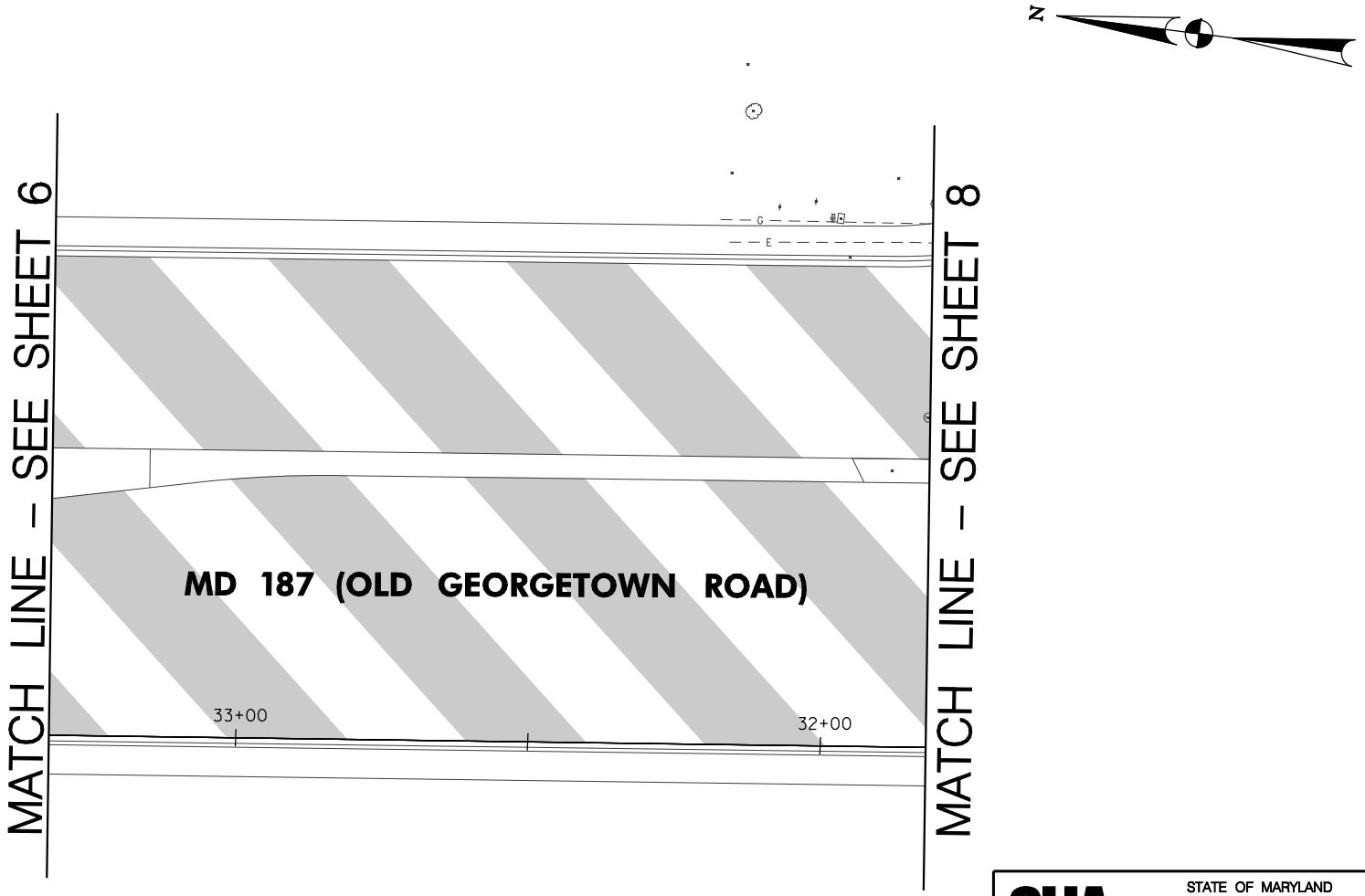
DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 6 OF 20

SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:04 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHD-0006_ MD187.dgn



LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

NOTES:
1. SEDIMENT AND EROSION CONTROL REGULATIONS WILL BE STRICTLY ENFORCED DURING CONSTRUCTION.
2. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED AT THE END OF THE WORK DAY UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
3. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
4. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 - PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295168

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 7 OF 20 SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:04 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHD-0007_ MD187.dgn

NOTES:
1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. INSTALL DETECTABLE WARNING SURFACE AT RAMPS PER MD 655.40.
3. SEDIMENT AND EROSION CONTROL REGULATIONS WILL BE STRICTLY ENFORCED DURING CONSTRUCTION.
4. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED AT THE END OF THE WORK DAY UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
5. NEW INLETS ARE TO BE TYPE 'S' (MD.374.70) WITH CURVED VANE GRATES (MD.379.05-01)
6. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
7. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

N

SEE DWG. DE-02

LINCOLN ST.

SEE DWG. DE-03

MATCH LINE - SEE SHEET 7

MD 187 (OLD GEORGETOWN ROAD)

MATCH LINE - SEE SHEET 9

31+00'

30+00

SEE DWG. DE-01

SEE DWG. DE-01

LINCOLN ST.

LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

FULL DEPTH PAVING

CONCRETE SIDEWALK

CONCRETE REMOVAL

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 - PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295168

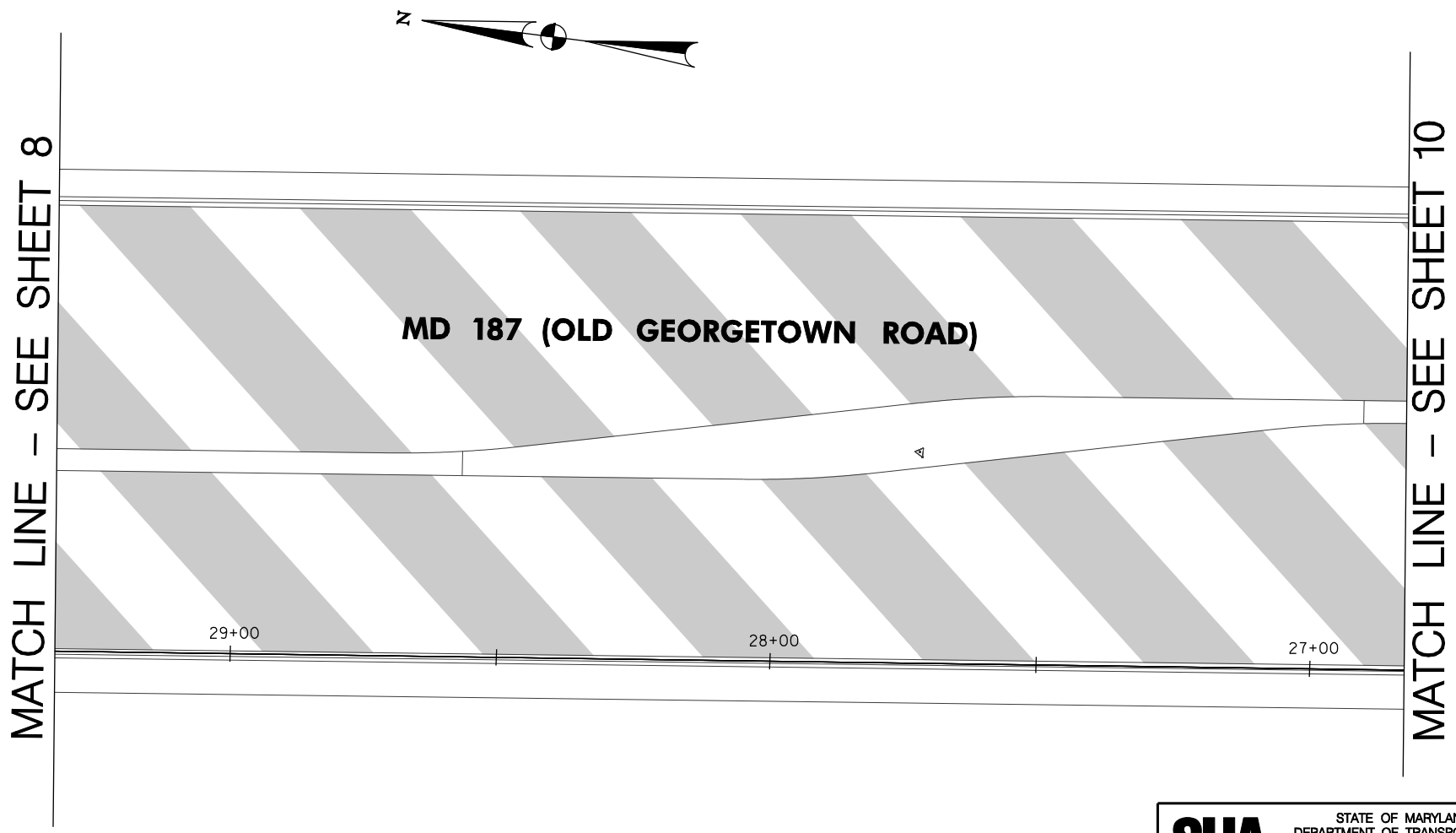
DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 8 OF 20

SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:04 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHD-0008_ MD187.dgn



LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

NOTES:
1. SEDIMENT AND EROSION CONTROL REGULATIONS WILL BE STRICTLY ENFORCED DURING CONSTRUCTION.
2. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED AT THE END OF THE WORK DAY UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
3. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
4. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

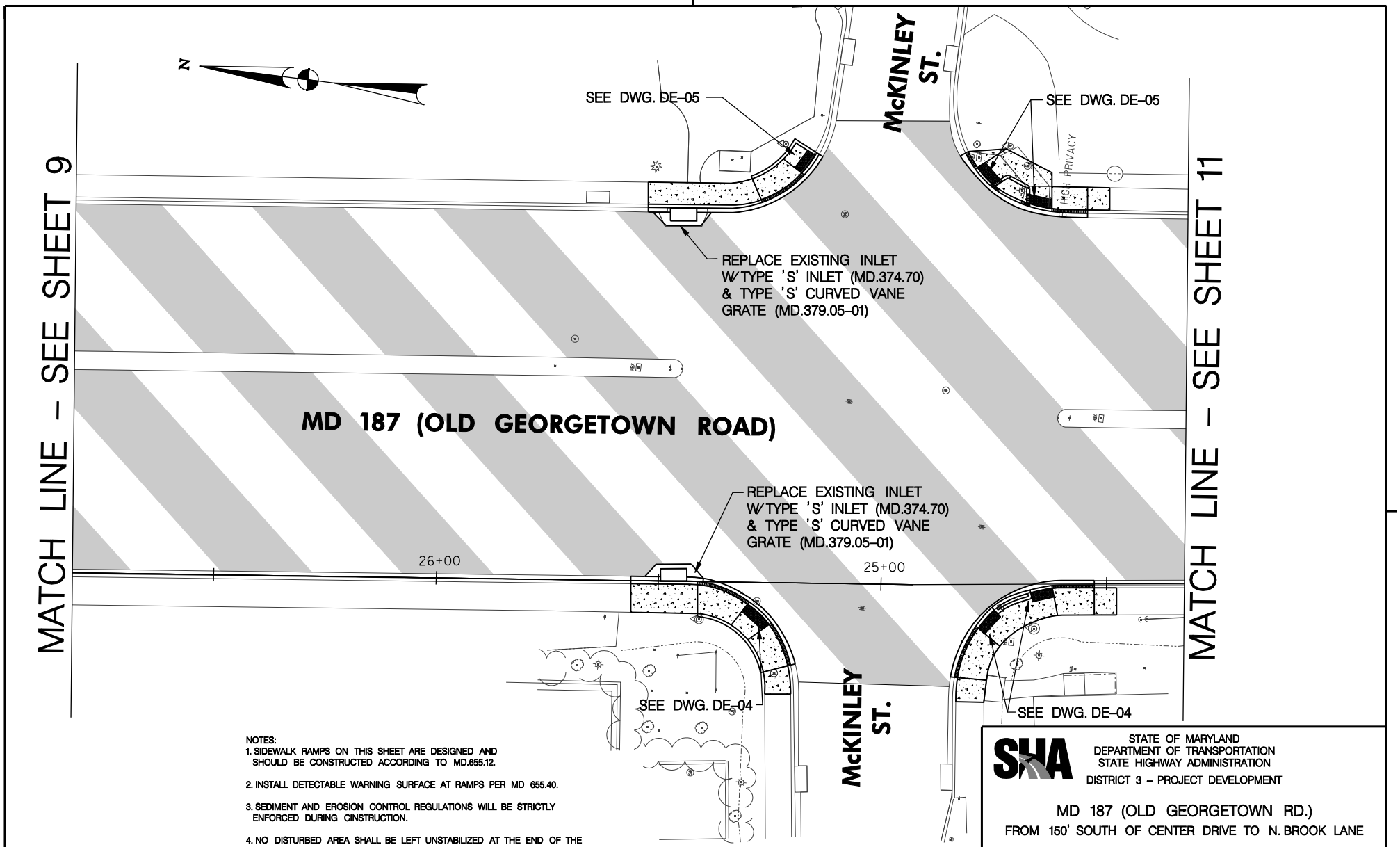
SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295168

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 9 OF 20 SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:05 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHD-0009_ MD187.dgn



NOTES:

1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. INSTALL DETECTABLE WARNING SURFACE AT RAMPS PER MD 655.40.
3. SEDIMENT AND EROSION CONTROL REGULATIONS WILL BE STRICTLY ENFORCED DURING CINSTRUCTION.
4. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED AT THE END OF THE WORK DAY UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
5. NEW INLETS ARE TO BE TYPE 'S' (MD.374.70) WITH CURVED VANE GRATES (MD.379.05-01)
6. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
7. SEE DRAWING DET-1 FOR INLET CONCRETE COLLAR.
8. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

SHA

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295168

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F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 10 OF 20 SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:05 AM
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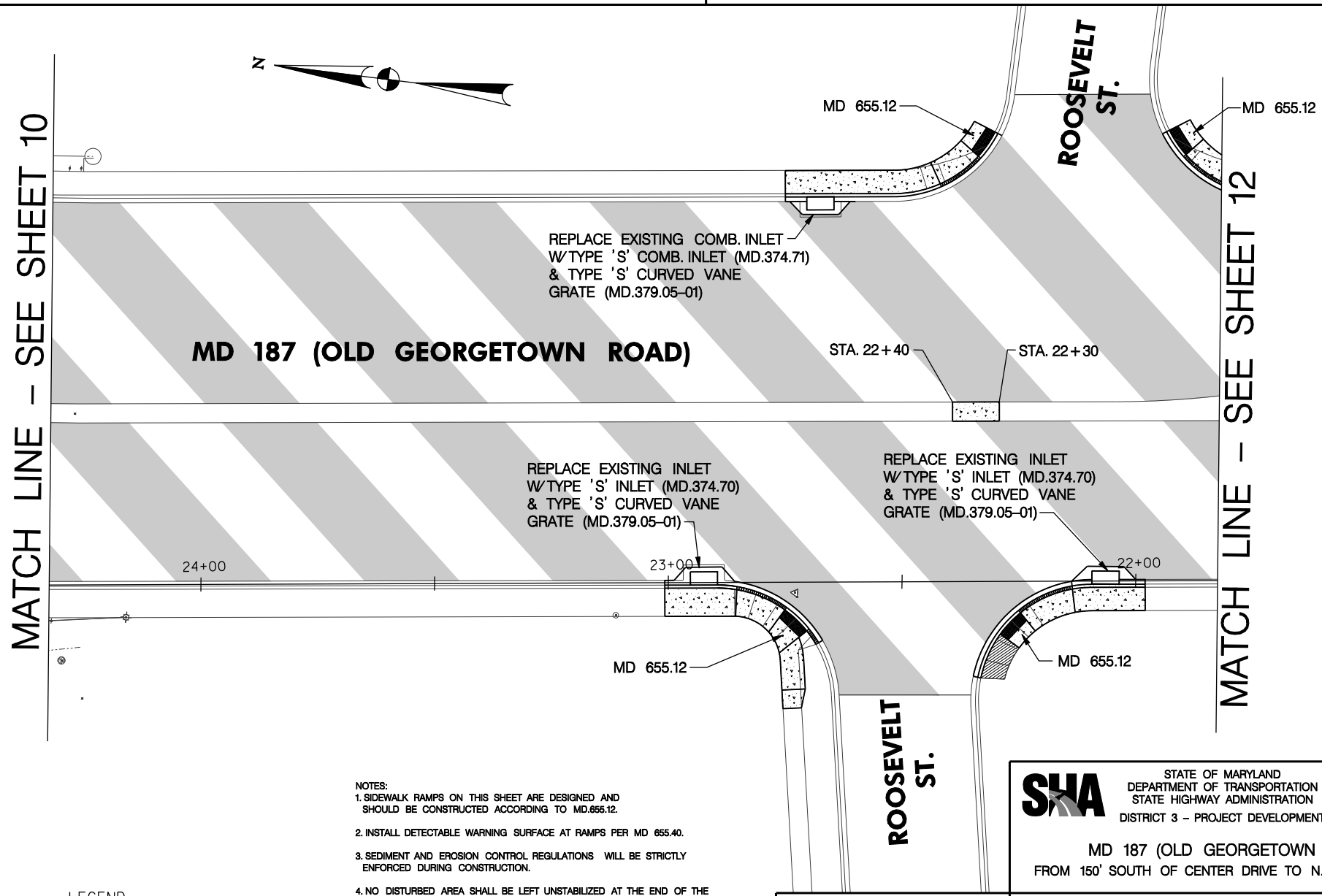

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6. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
7. SEE DRAWING DET-1 FOR INLET CONCRETE COLLAR DETAIL.
8. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE REMOVAL

CONCRETE SIDEWALK

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295168

DESIGNED BY CDG
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COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 11 OF 20 SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:05 AM
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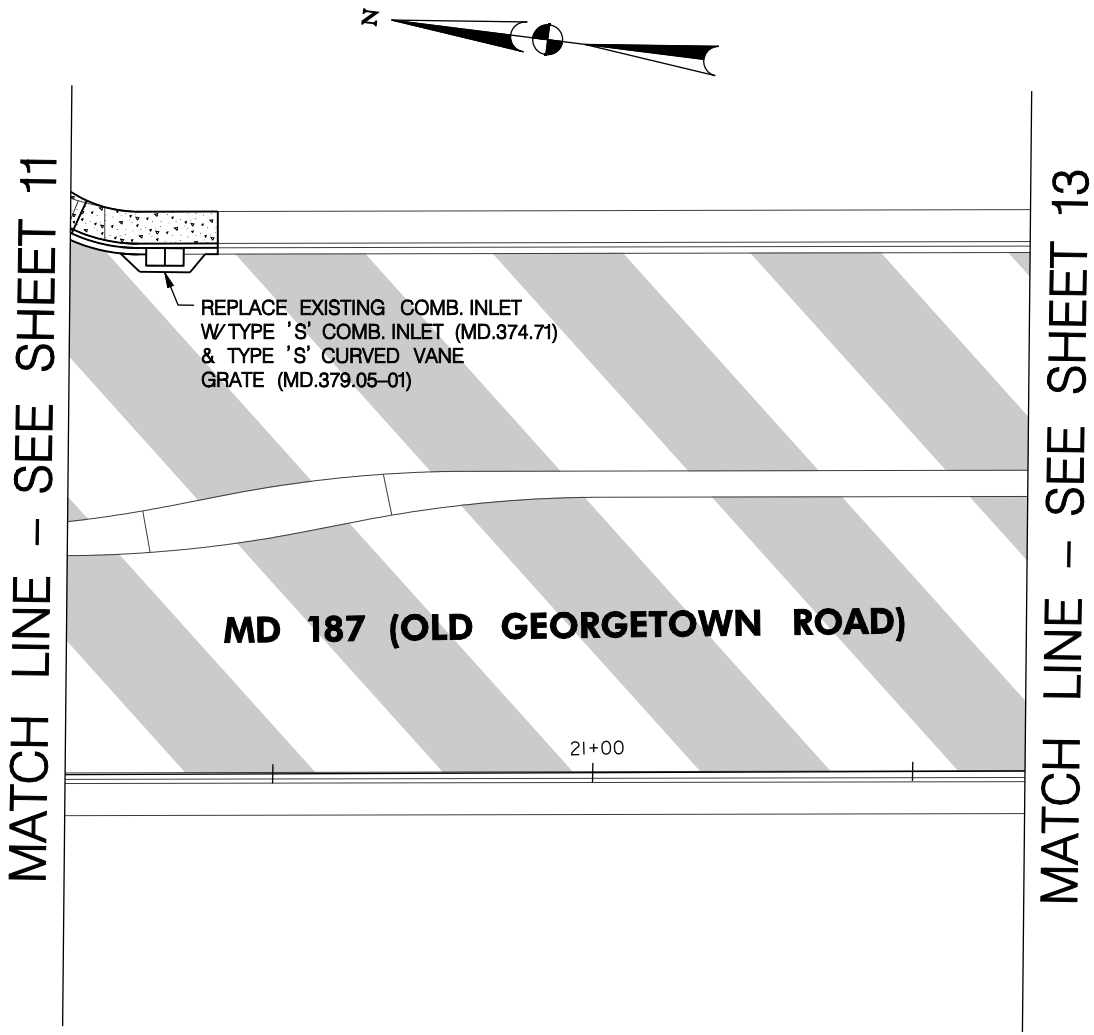

LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE REMOVAL

CONCRETE SIDEWALK

NOTES:

1. SEDIMENT AND EROSION CONTROL REGULATIONS WILL BE STRICTLY ENFORCED DURING CONSTRUCTION.
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CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295168

DESIGNED BY CDG
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CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 12 OF 20 SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:06 AM
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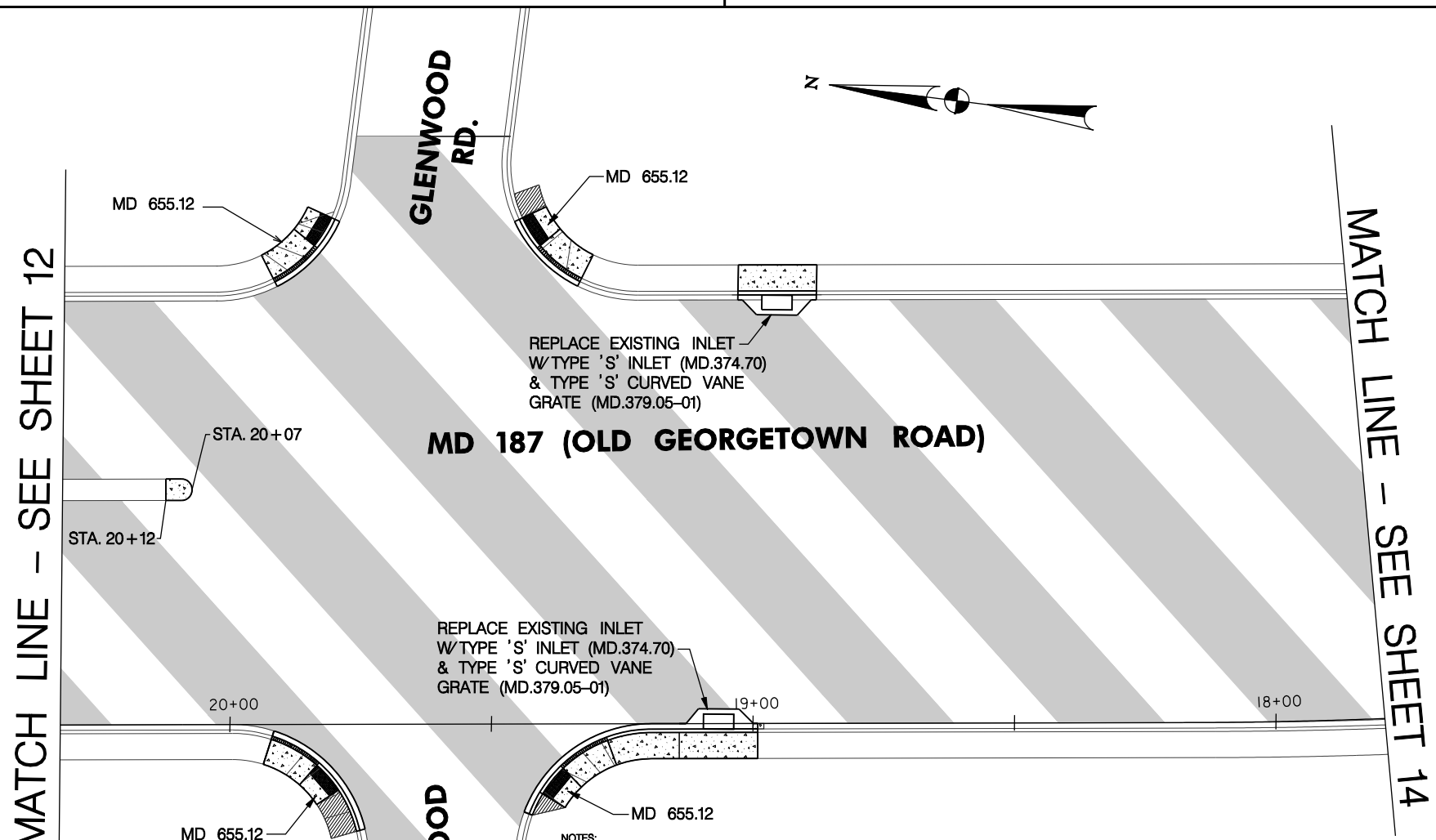

NOTES:

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7. SEE DRAWING DET-1 FOR CONCRETE COLLAR DETAIL.
8. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

LEGEND

- 1.5" GRIND / 1.5" BASE / 1.5" SURFACE
- CONCRETE REMOVAL
- CONCRETE SIDEWALK

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 - PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

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COUNTY MONTGOMERY
LOGMILE

CONSTELLATION DESIGN GROUP, INC.
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SUITE 200
TIMONIUM, MD 21093
410-252-1884

DRAWING NO. 13 OF 20

SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:06 AM
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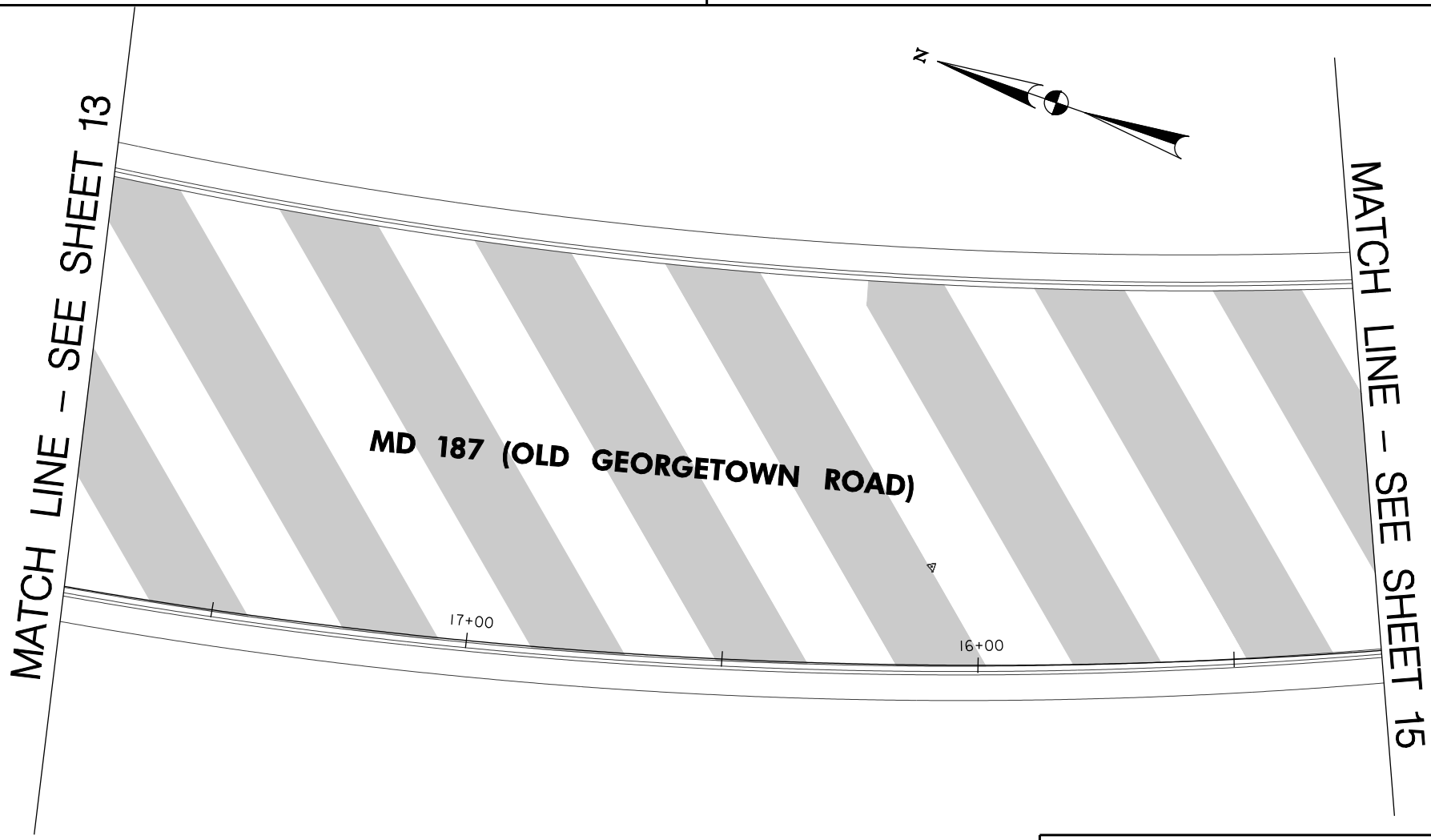

LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

NOTES:
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CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
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410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 - PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

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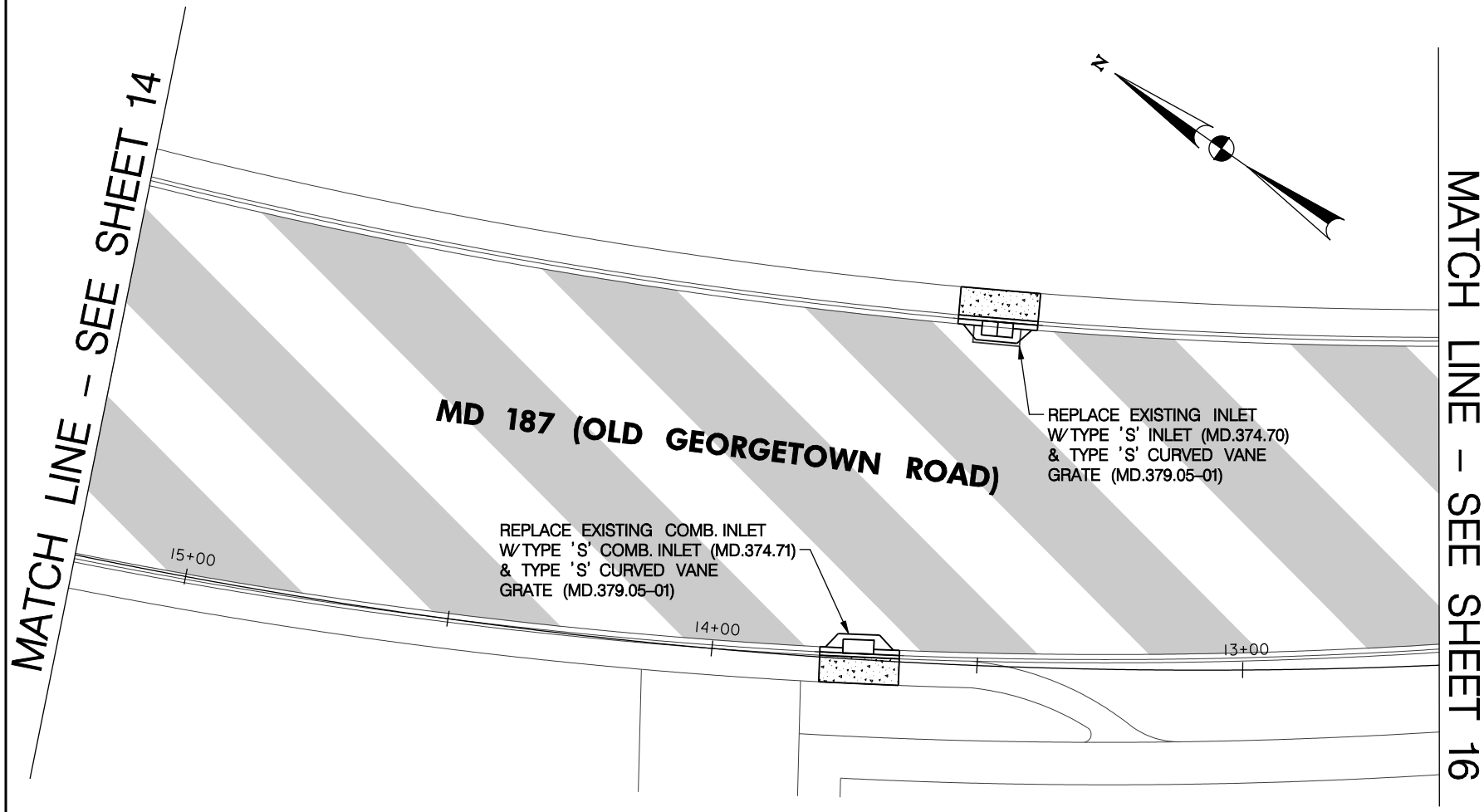
COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 14 OF 20 SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:06 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHD-0014_ MD187.dgn



LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

NOTES:
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CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 - PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295168

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DRAWN BY CDG
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F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 15 OF 20 SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:07 AM
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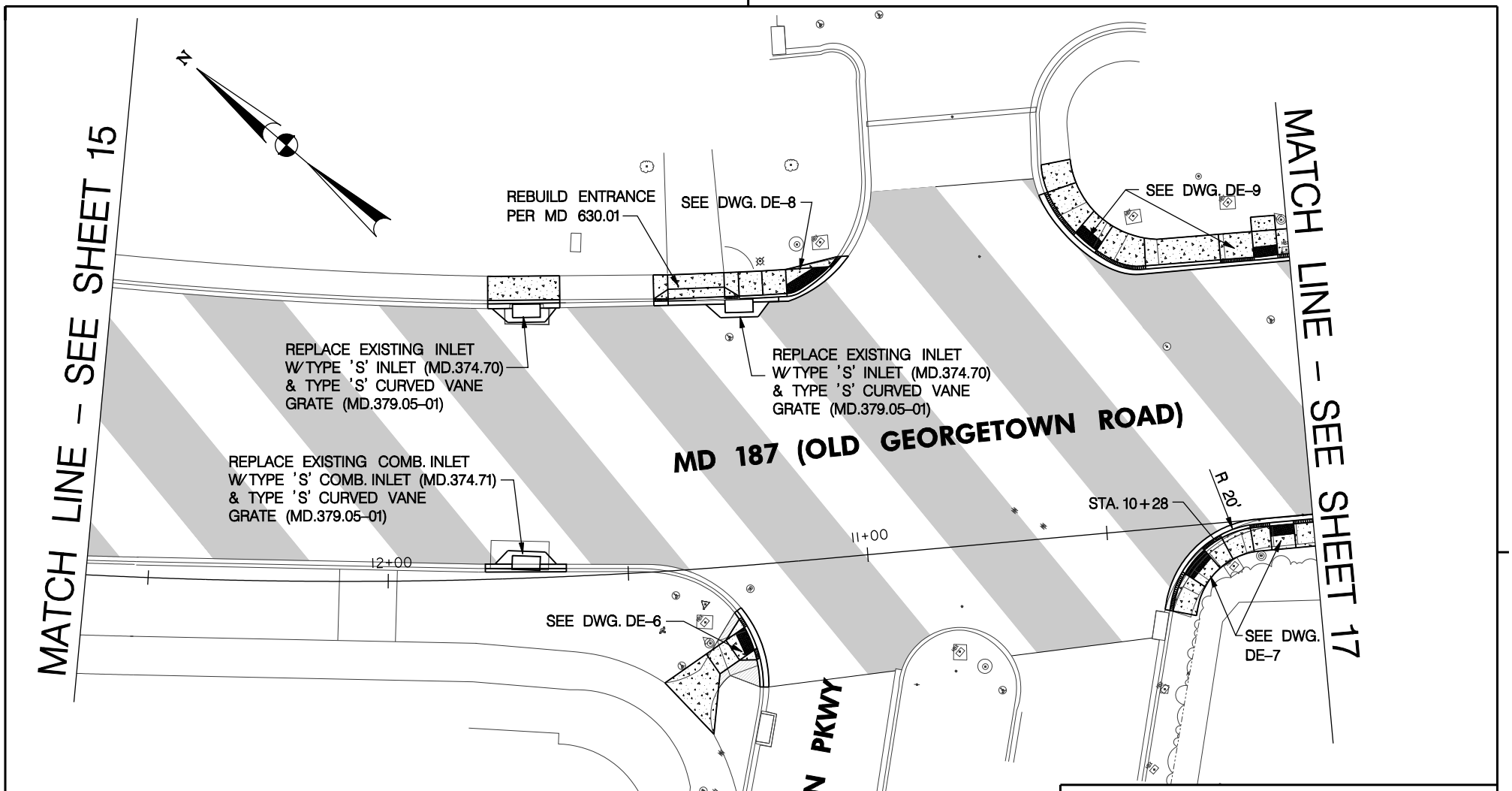

NOTES:
1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.11 AND MD.655.12.
2. INSTALL DETECTABLE WARNING SURFACE AT RAMPS PER MD 655.40.
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LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE REMOVAL

CONCRETE SIDEWALK

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 - PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295168

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CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 16 OF 20 SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:07 AM
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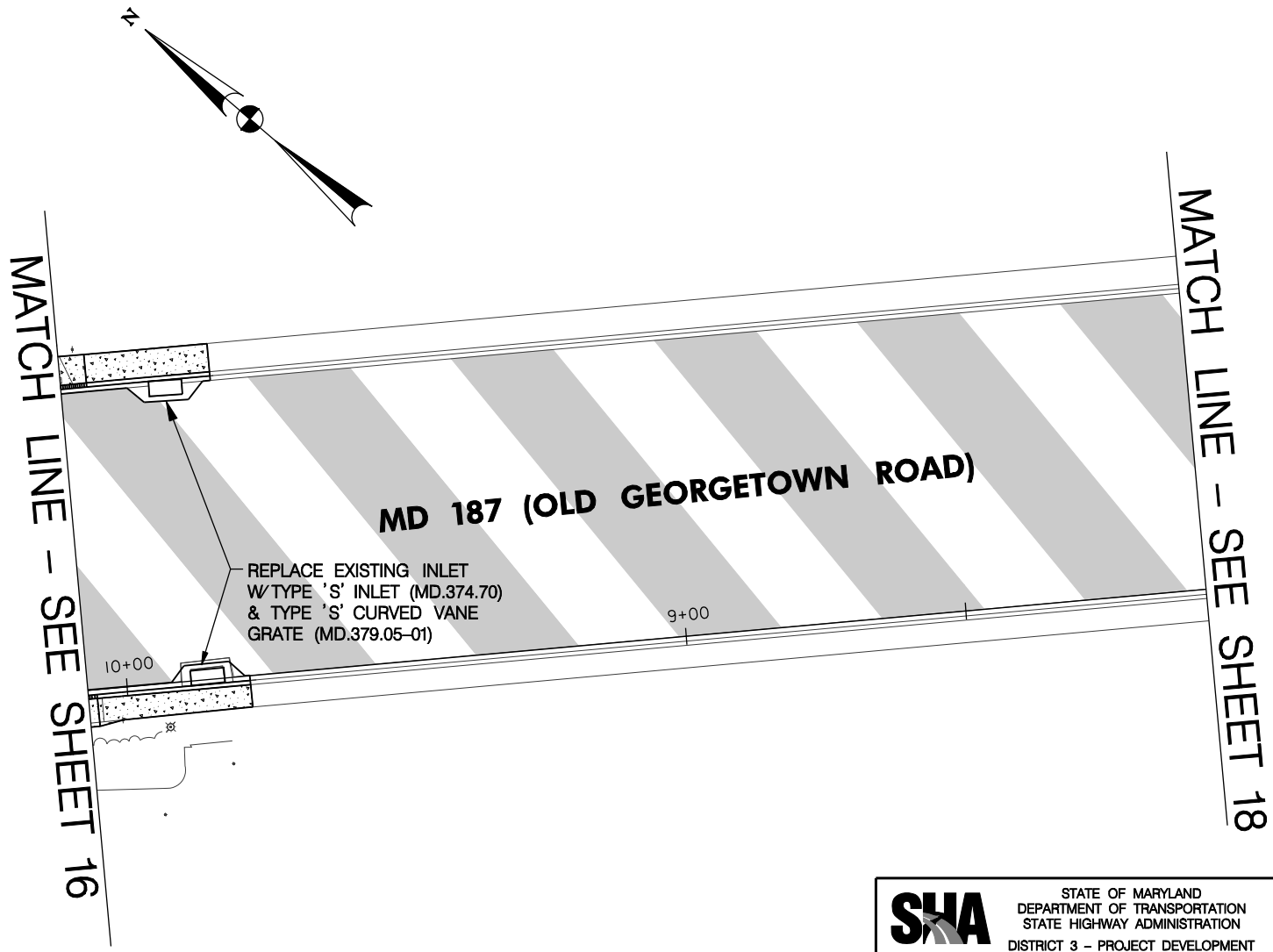

LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

NOTES:

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CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295168

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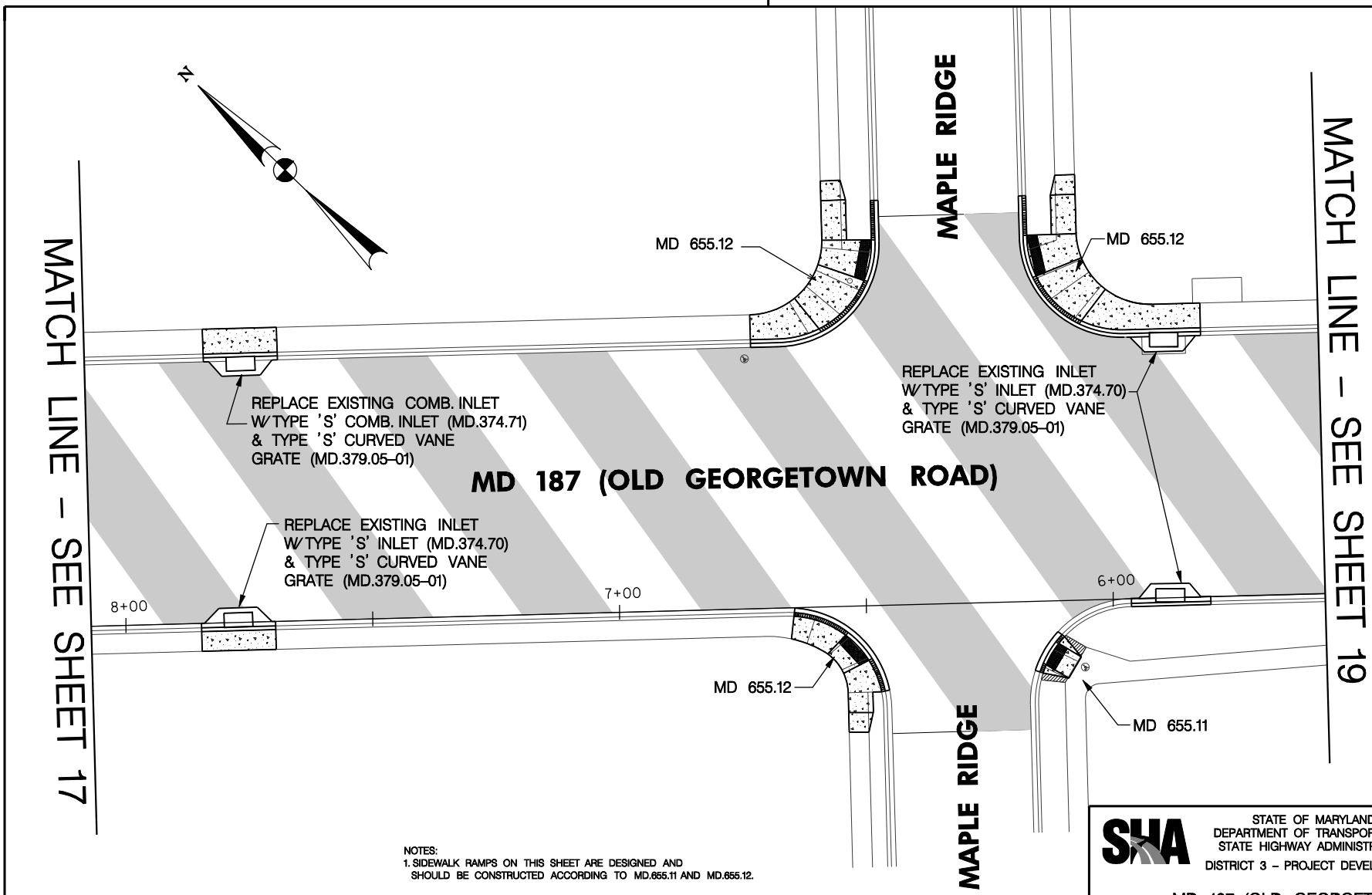
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 17 OF 20 SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:07 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHD-0017_ MD187.dgn



NOTES:
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LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE REMOVAL

CONCRETE SIDEWALK

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295168

DESIGNED BY CDG
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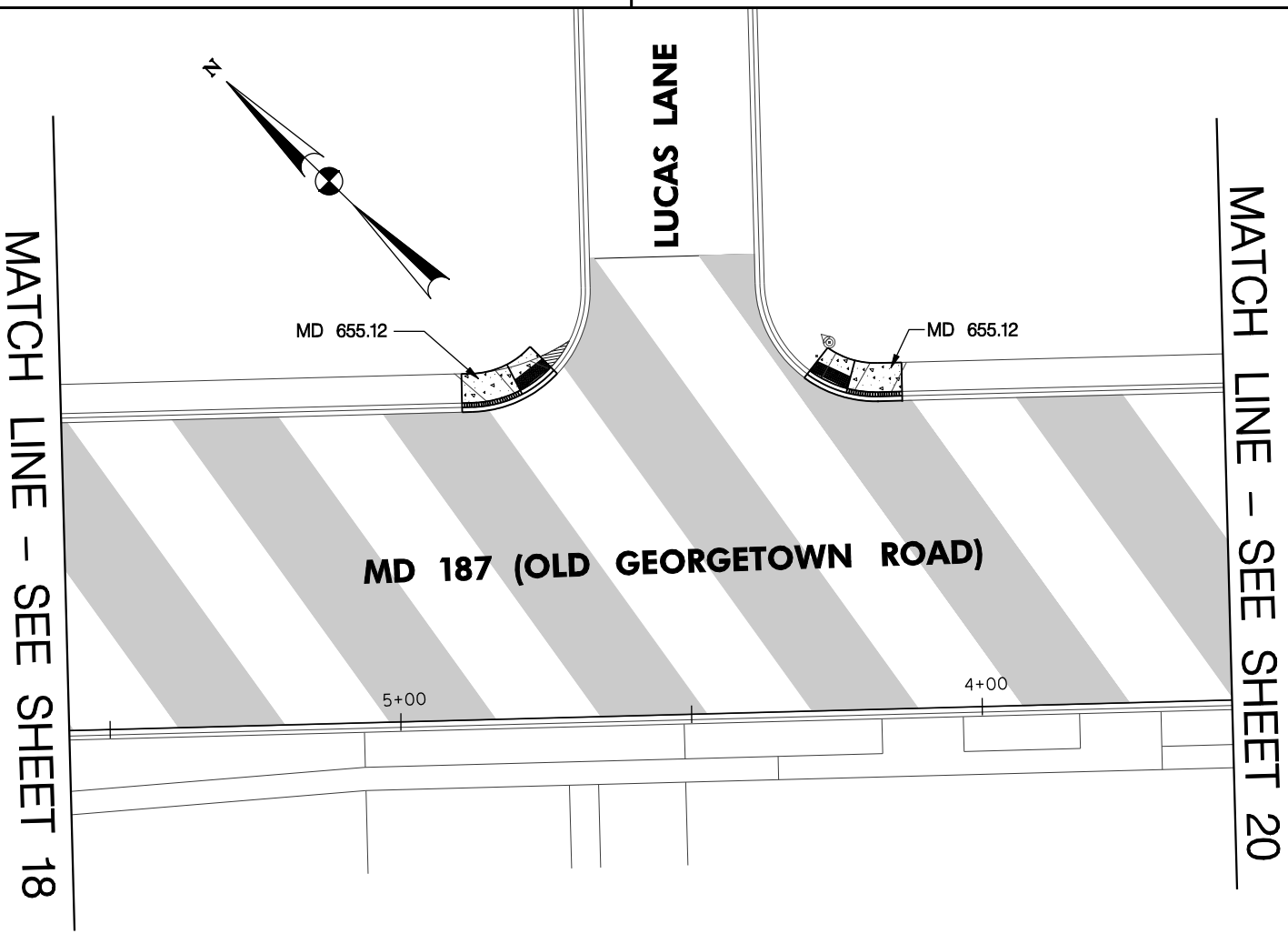
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 18 OF 20 SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:08 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHD-0018_ MD187.dgn



LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE REMOVAL

CONCRETE SIDEWALK

NOTES:

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CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
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SUITE 200
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410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 - PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

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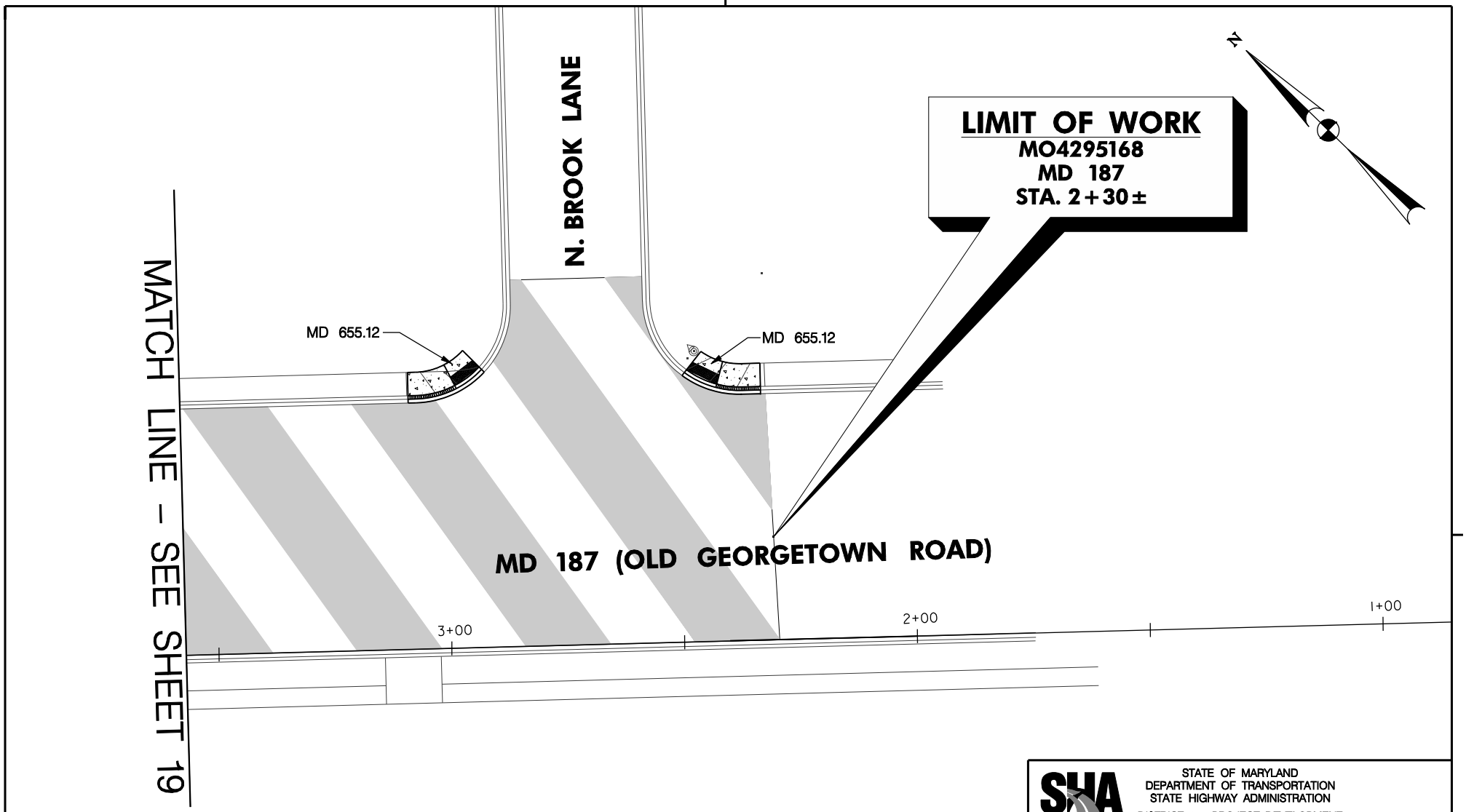
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 19 OF 20 SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 10:08 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHD-0019_ MD187.dgn



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LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
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MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

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COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 20 OF 20 SHEET NO.

PLOTTED: Friday, March 06, 2009 AT 12:31 PM
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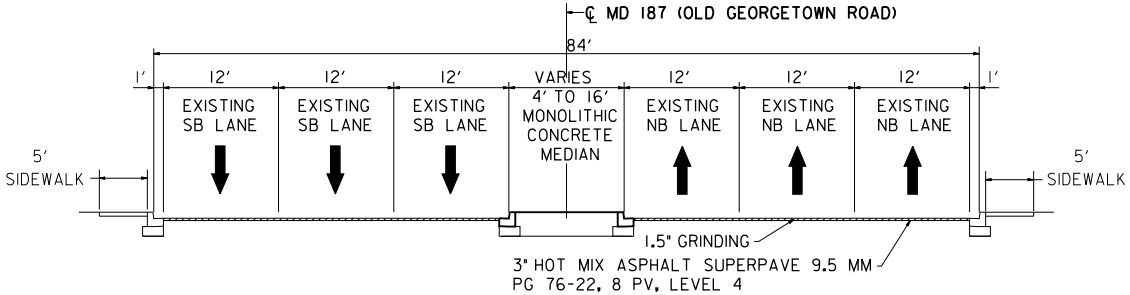
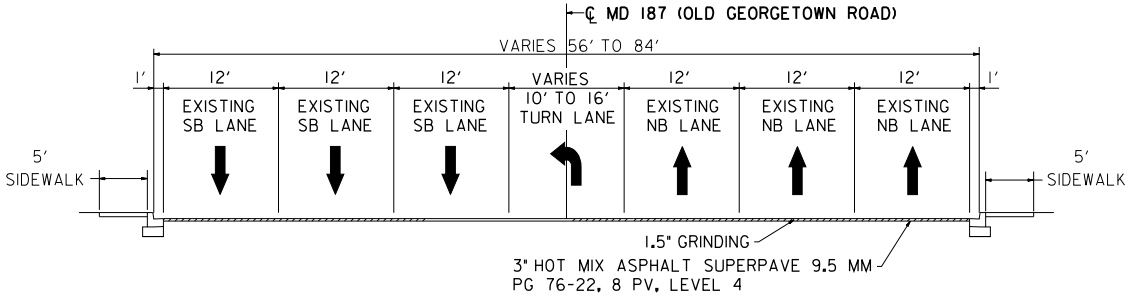
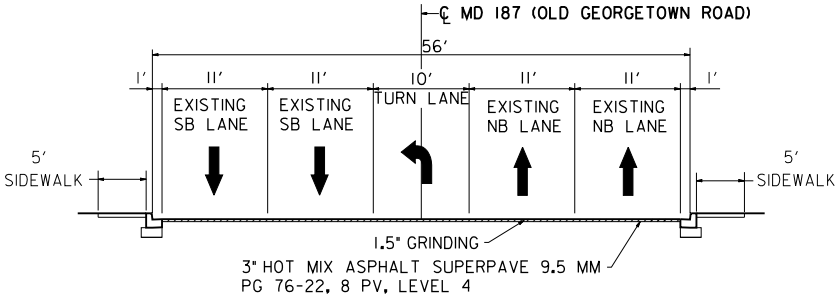


TYPICAL SECTION MD 187 (OLD GEORGETOWN ROAD)
FROM STATION 46+37 TO GLENWOOD ROAD 19+50±



TYPICAL SECTION MD 187 (OLD GEORGETOWN ROAD)
FROM STATION 12+50 TO GLENWOOD ROAD 19+50±



TYPICAL SECTION MD 187 (OLD GEORGETOWN ROAD)
FROM STATION 12+50± TO STATION 2+30±

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

TYPICAL SECTIONS

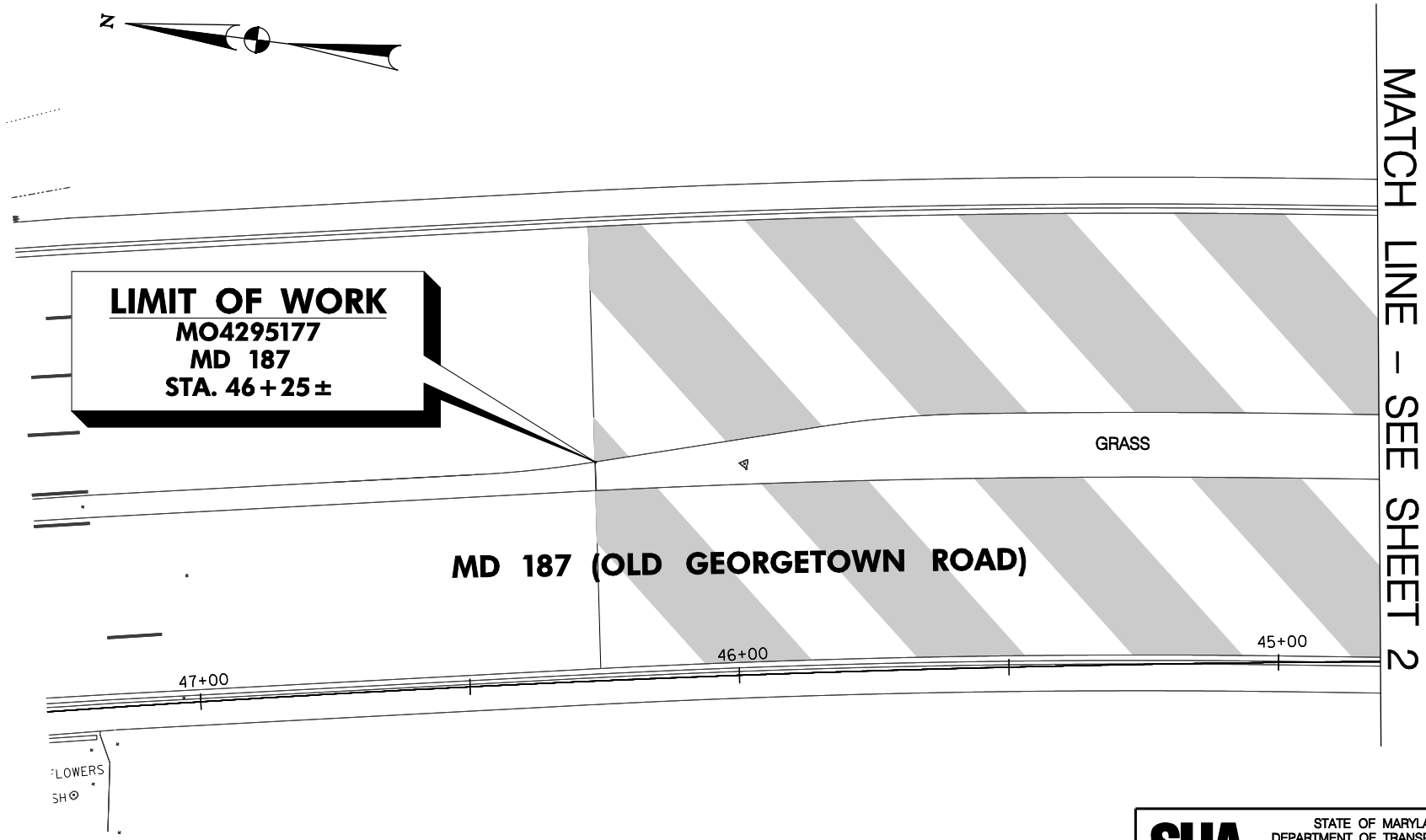
SCALE 1" = 20' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. TS-1 OF 1 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:36 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHT-X000_MD187.dgn



LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

NOTES:

1. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
2. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
3. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

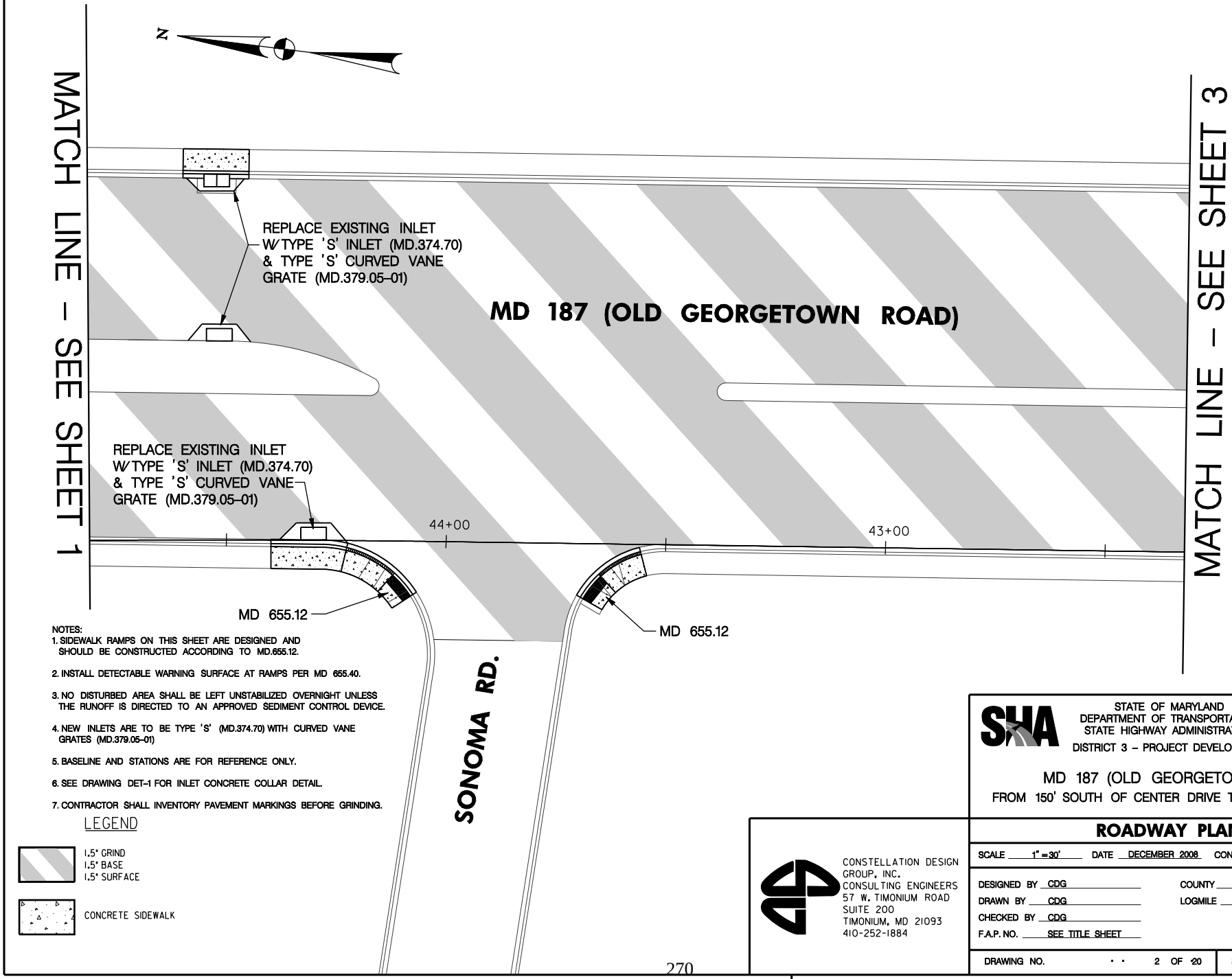
SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 1 OF 20 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:22 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHD-0001_ MD187.dgn



NOTES:

1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. INSTALL DETECTABLE WARNING SURFACE AT RAMPS PER MD 655.40.
3. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
4. NEW INLETS ARE TO BE TYPE 'S' (MD.374.70) WITH CURVED VANE GRATES (MD.379.05–01)
5. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
6. SEE DRAWING DET-1 FOR INLET CONCRETE COLLAR DETAIL.
7. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

ROADWAY PLAN

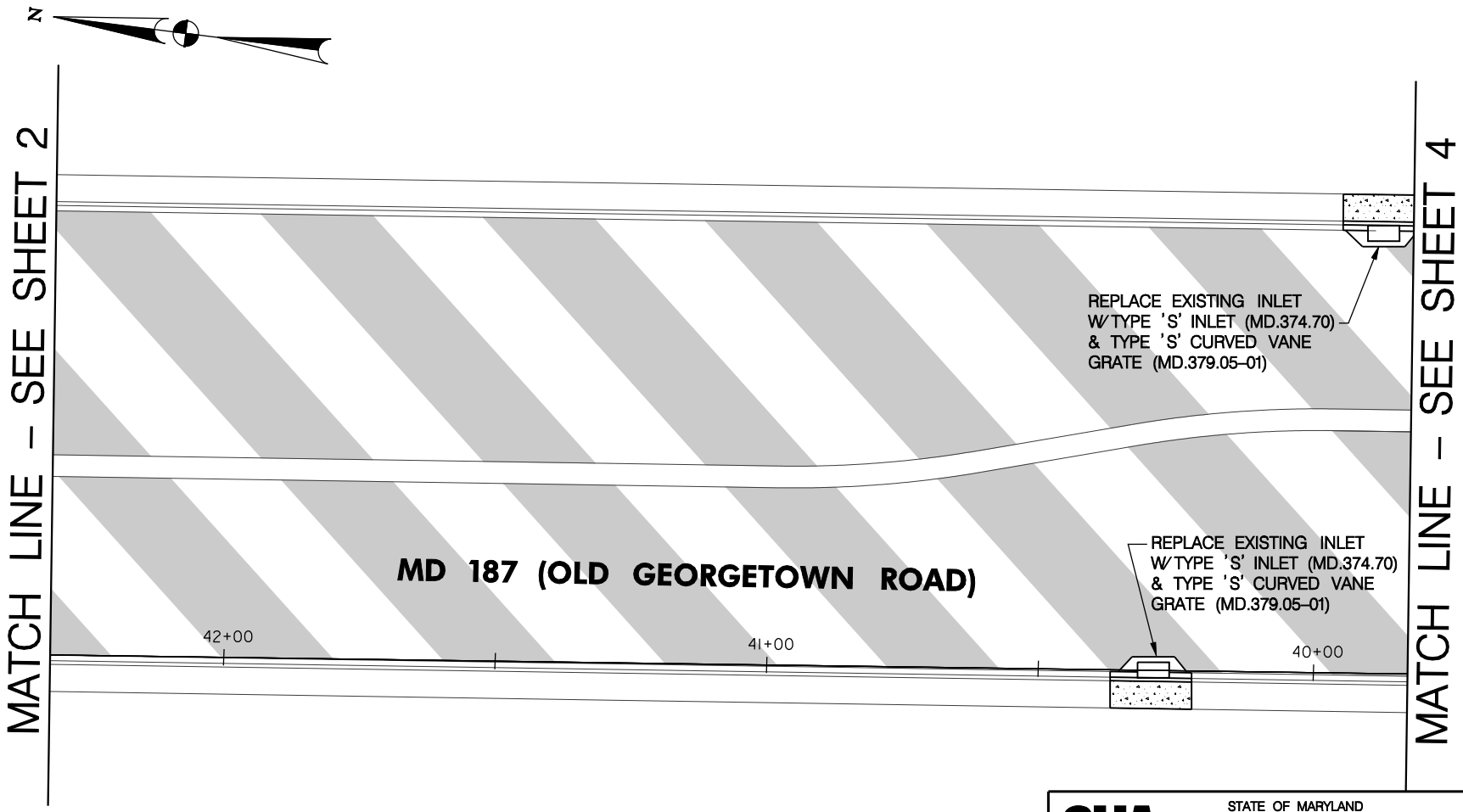
SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 2 OF 20 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:22 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHD-0002_ MD187.dgn



LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

NOTES:
1. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE
2. NEW INLETS ARE TO BE TYPE 'S' (MD.374.70) WITH CURVED VANE GRATES (MD.379.05-01)
3. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
4. SEE DRAWING DET-1 FOR INLET CONCRETE COLLAR DETAIL.
5. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 - PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

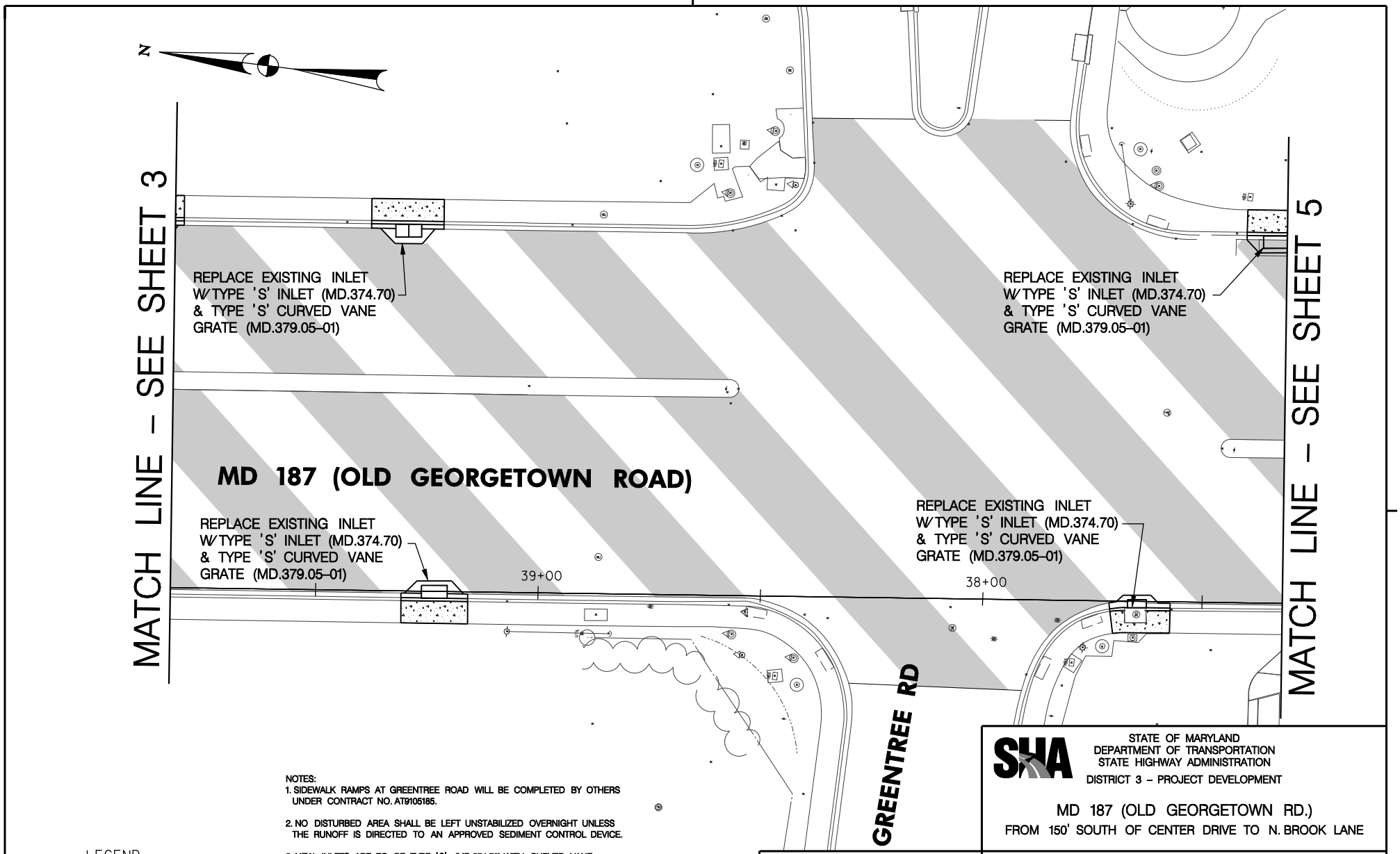
SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 3 OF 20 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:22 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHD-0003_ MD187.dgn



NOTES:
1. SIDEWALK RAMPS AT GREENTREE ROAD WILL BE COMPLETED BY OTHERS UNDER CONTRACT NO. AT9105185.
2. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
3. NEW INLETS ARE TO BE TYPE 'S' (MD.374.70) WITH CURVED VANE GRATES (MD.379.05-01)
4. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
5. SEE DRAWING DET-1 FOR INLET CONCRETE COLLAR DETAIL.
6. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

ROADWAY PLAN

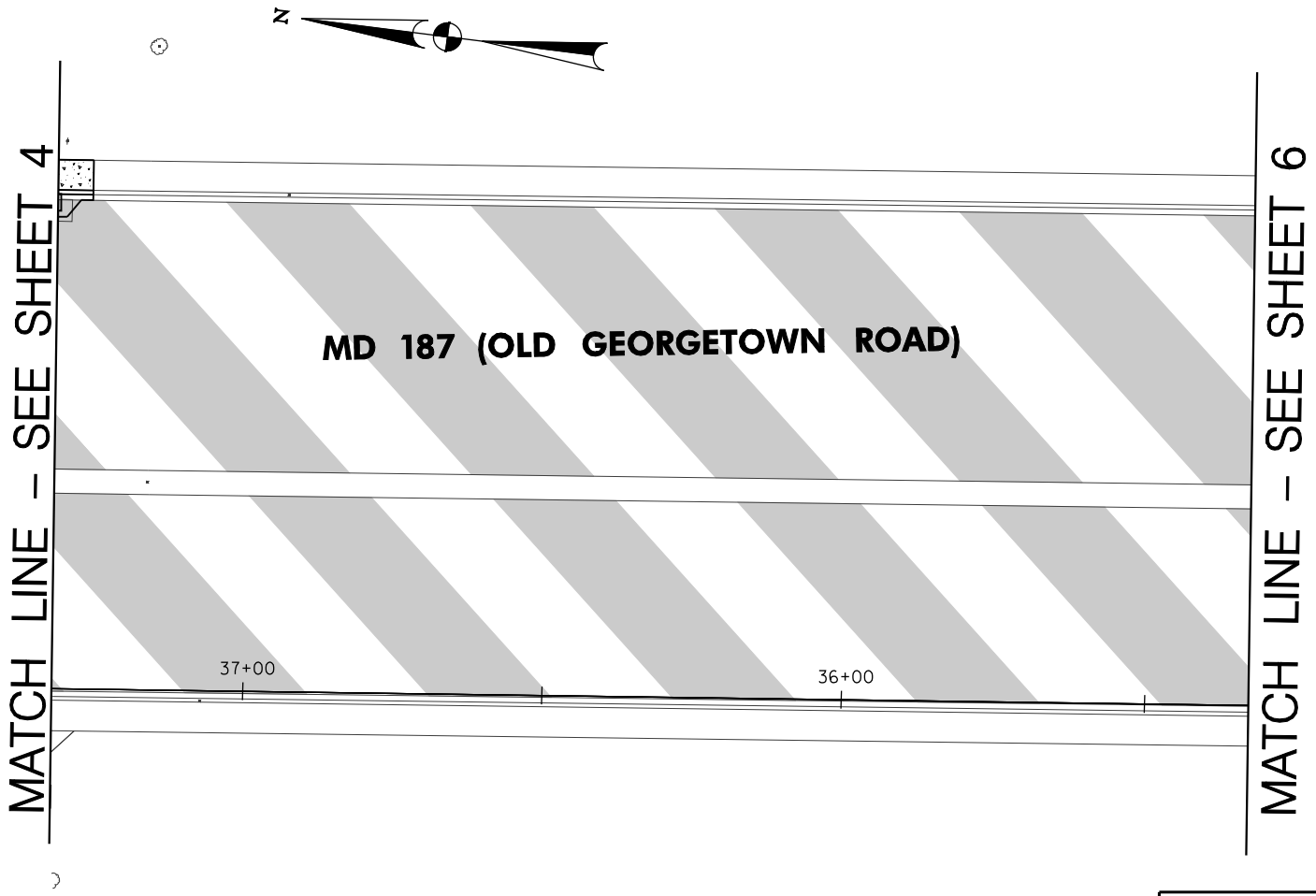
SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 4 OF 20 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:23 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHD-0004_ MD187.dgn



LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

NOTES:
1. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
2. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
3. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 - PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

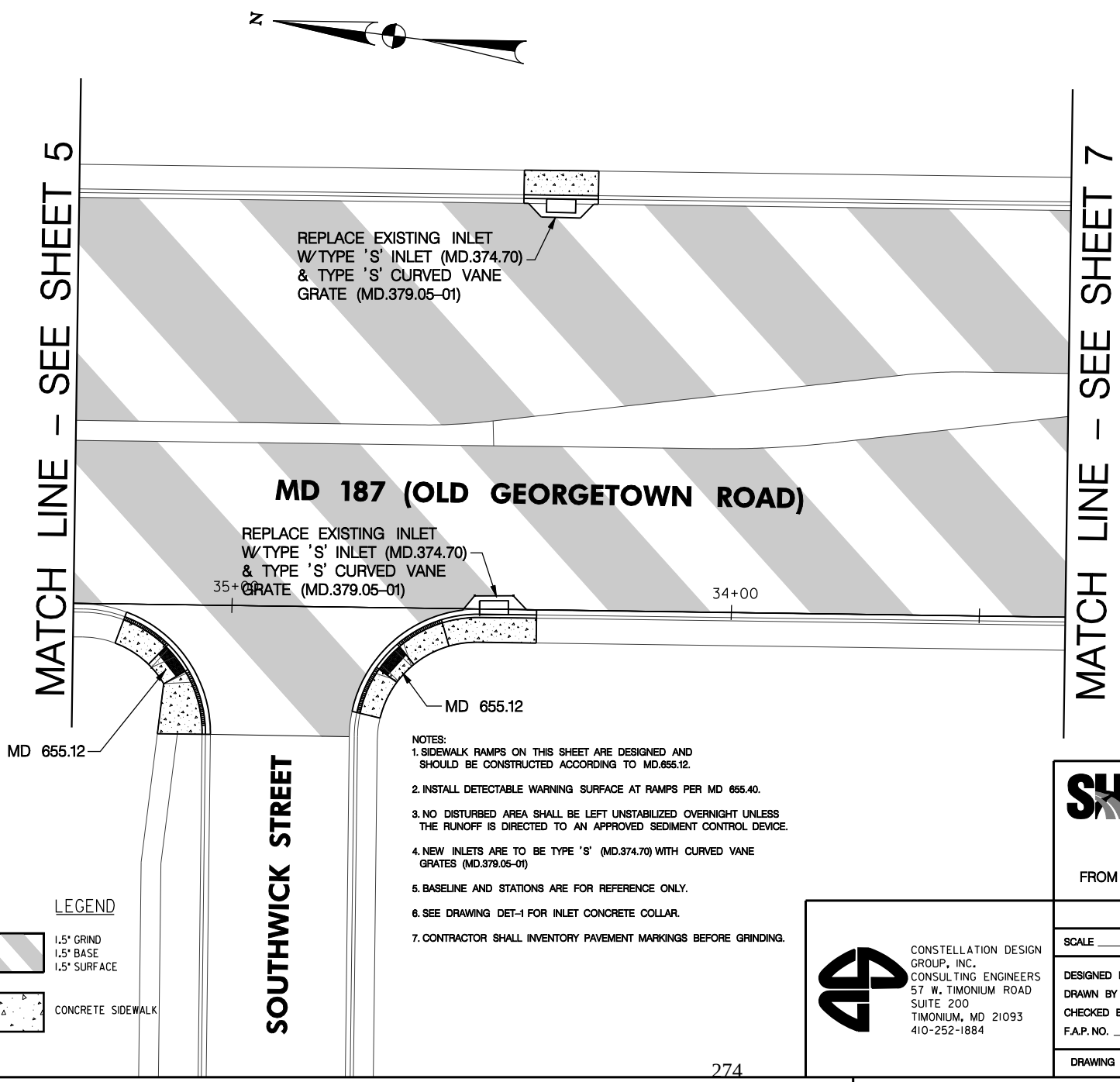
SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 5 OF 20 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:23 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHD-0005_ MD187.dgn



NOTES:

1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. INSTALL DETECTABLE WARNING SURFACE AT RAMPS PER MD 655.40.
3. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
4. NEW INLETS ARE TO BE TYPE 'S' (MD.374.70) WITH CURVED VANE GRATES (MD.379.05-01)
5. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
6. SEE DRAWING DET-1 FOR INLET CONCRETE COLLAR.
7. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 6 OF 20 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:06 AM
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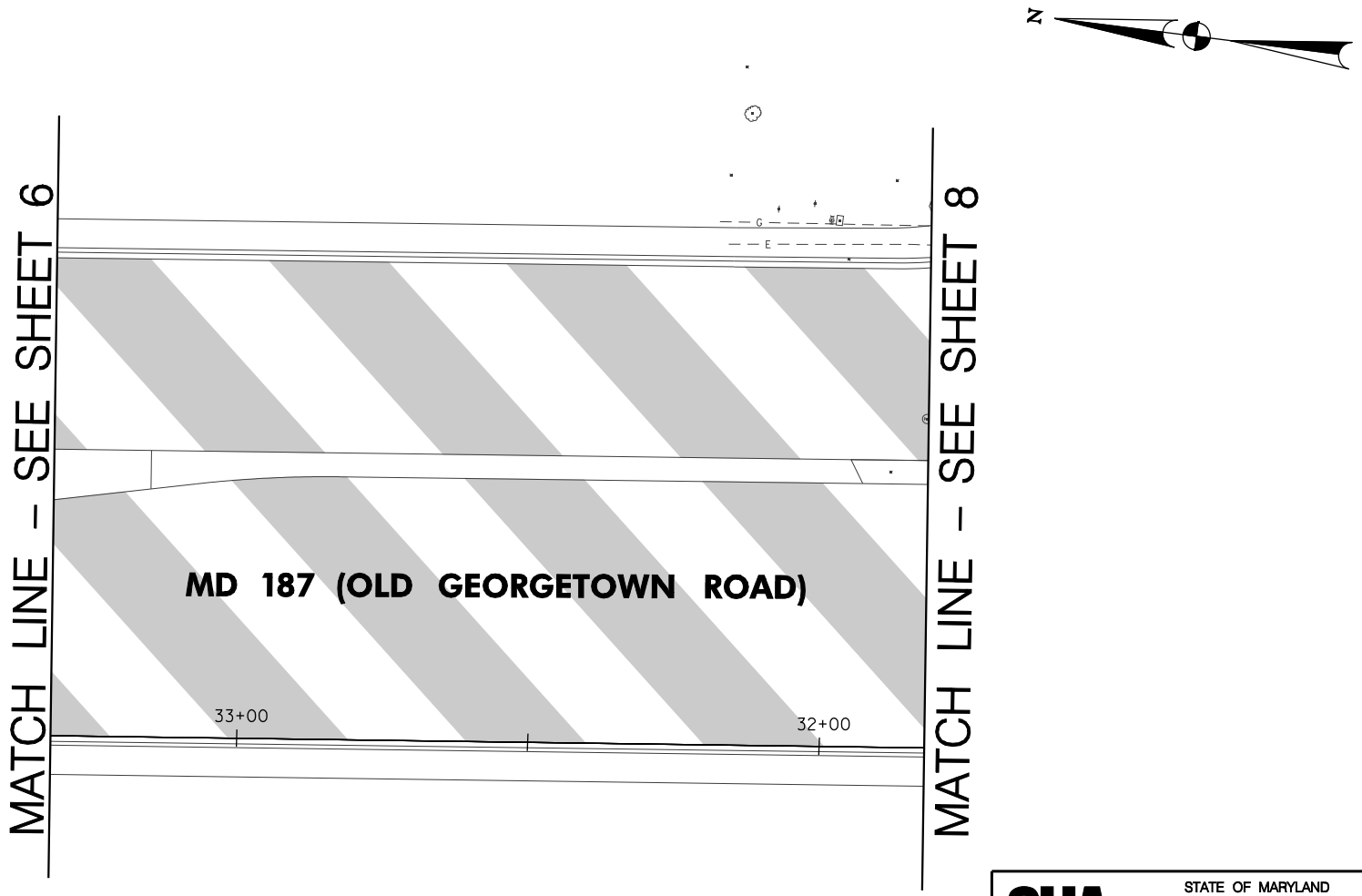


LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

NOTES:
1. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.

2. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.

3. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 - PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295177

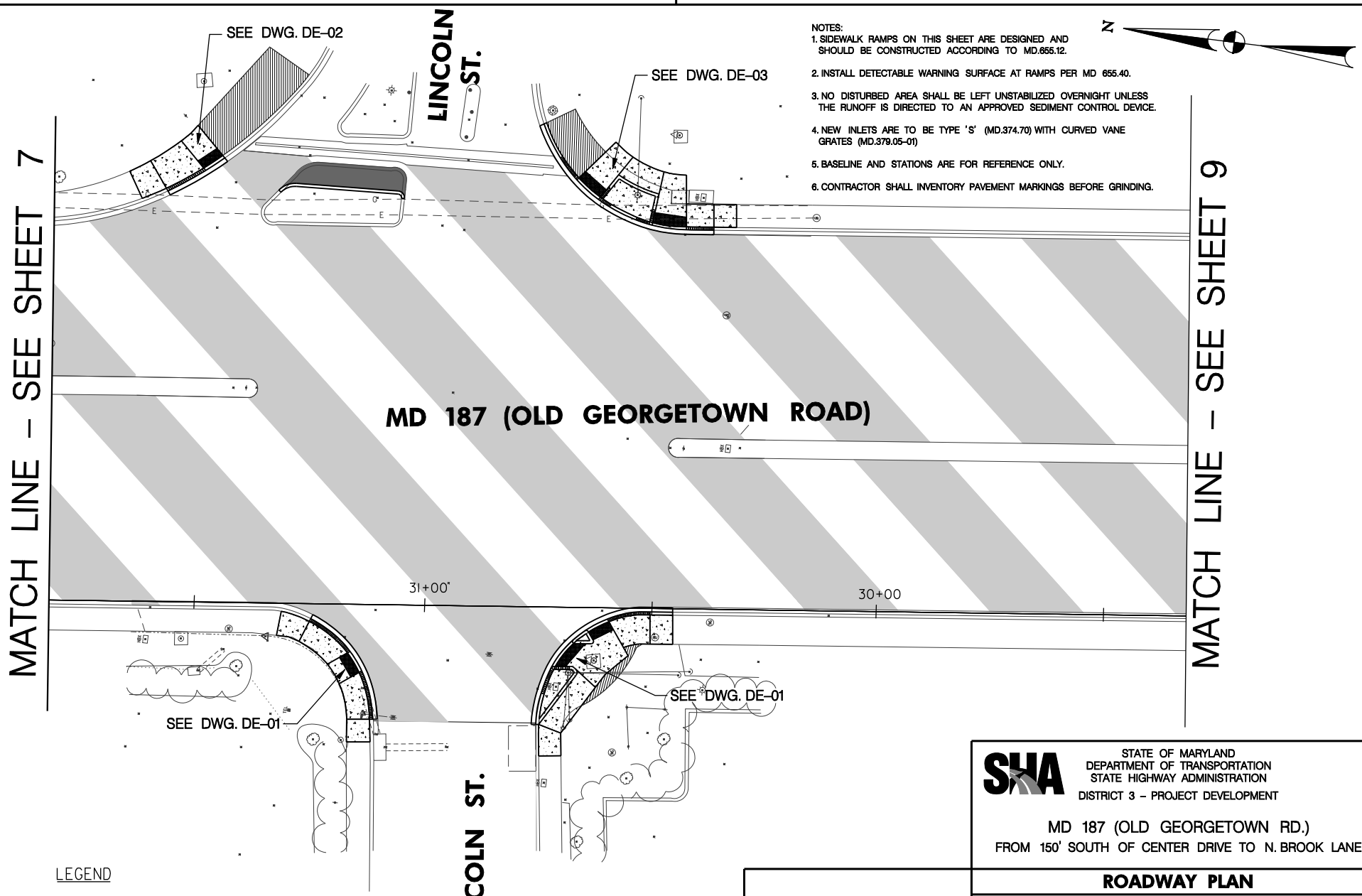
DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 7 OF 20 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 09:38 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHD-0007_ MD187.dgn

NOTES:
1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. INSTALL DETECTABLE WARNING SURFACE AT RAMPS PER MD 655.40.
3. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
4. NEW INLETS ARE TO BE TYPE 'S' (MD.374.70) WITH CURVED VANE GRATES (MD.379.05-01)
5. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
6. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.



LEGEND

- 1.5" GRIND, 1.5" BASE, 1.5" SURFACE
- FULL DEPTH PAVING
- CONCRETE SIDEWALK
- CONCRETE REMOVAL

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 - PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 8 OF 20 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 09:54 AM
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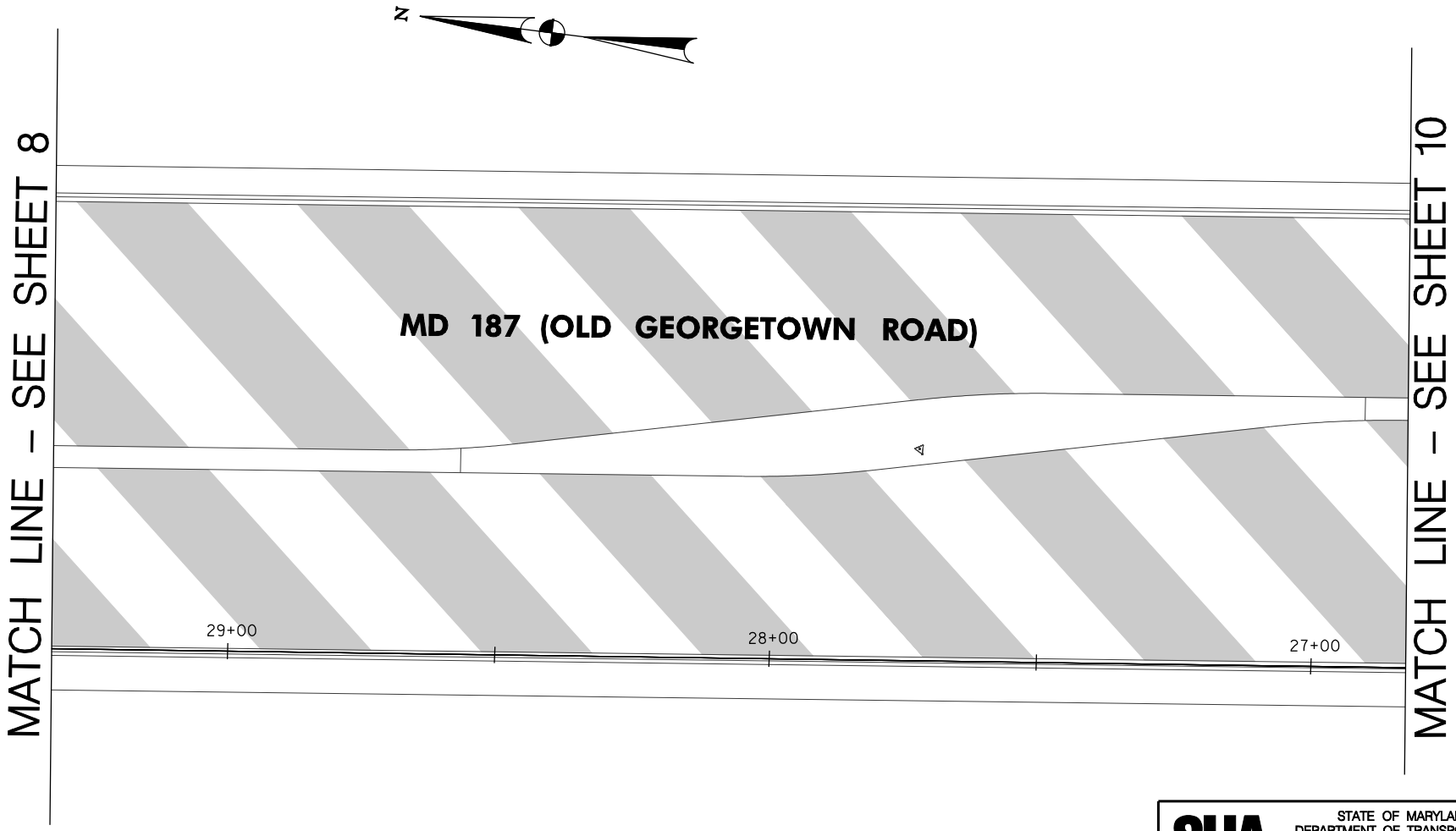

LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

NOTES:
1. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.

2. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.

3. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 9 OF 20 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:24 AM
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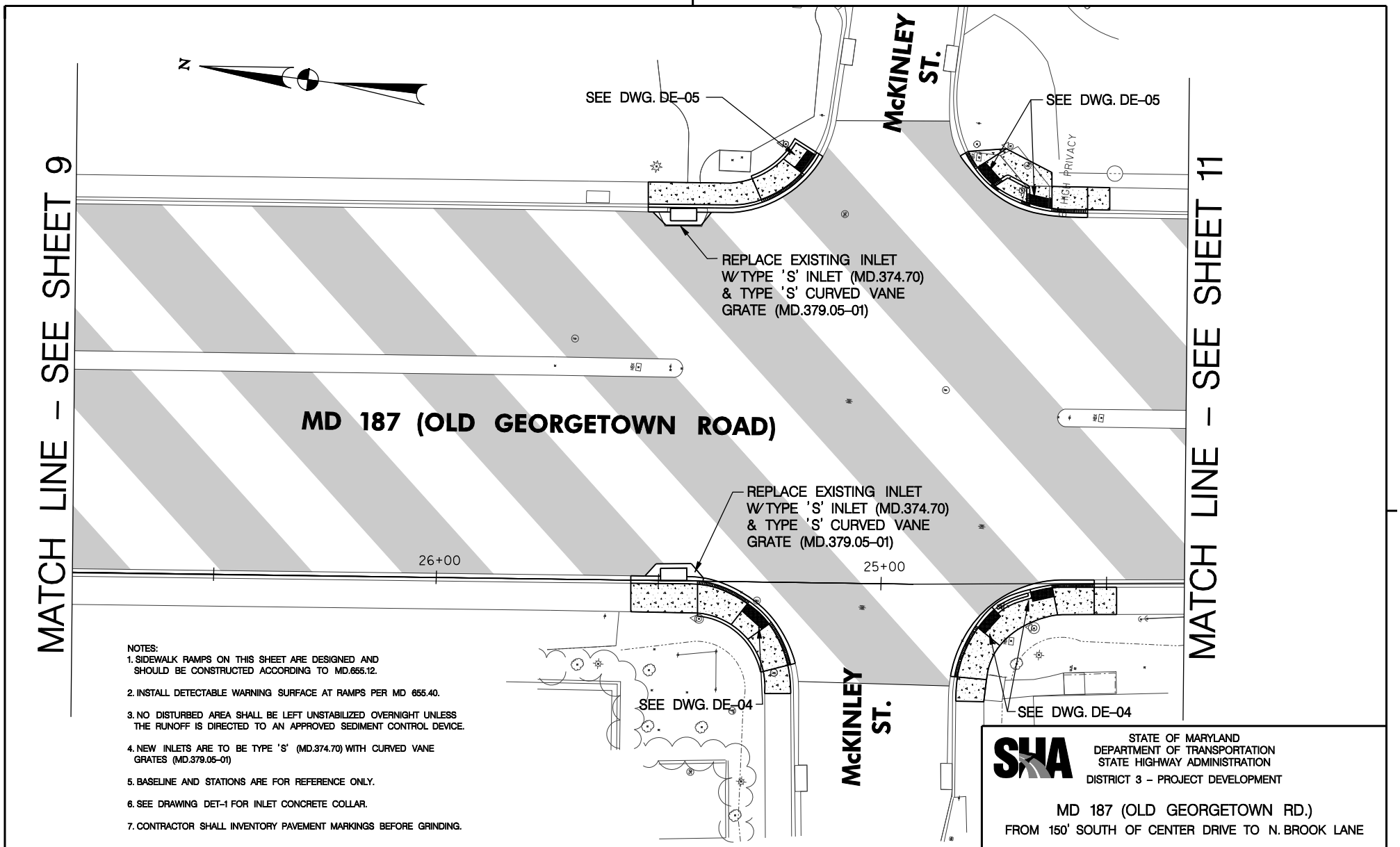

NOTES:
1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. INSTALL DETECTABLE WARNING SURFACE AT RAMPS PER MD 655.40.
3. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
4. NEW INLETS ARE TO BE TYPE 'S' (MD.374.70) WITH CURVED VANE GRATES (MD.379.05-01)
5. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
6. SEE DRAWING DET-1 FOR INLET CONCRETE COLLAR.
7. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 10 OF 20
SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:25 AM
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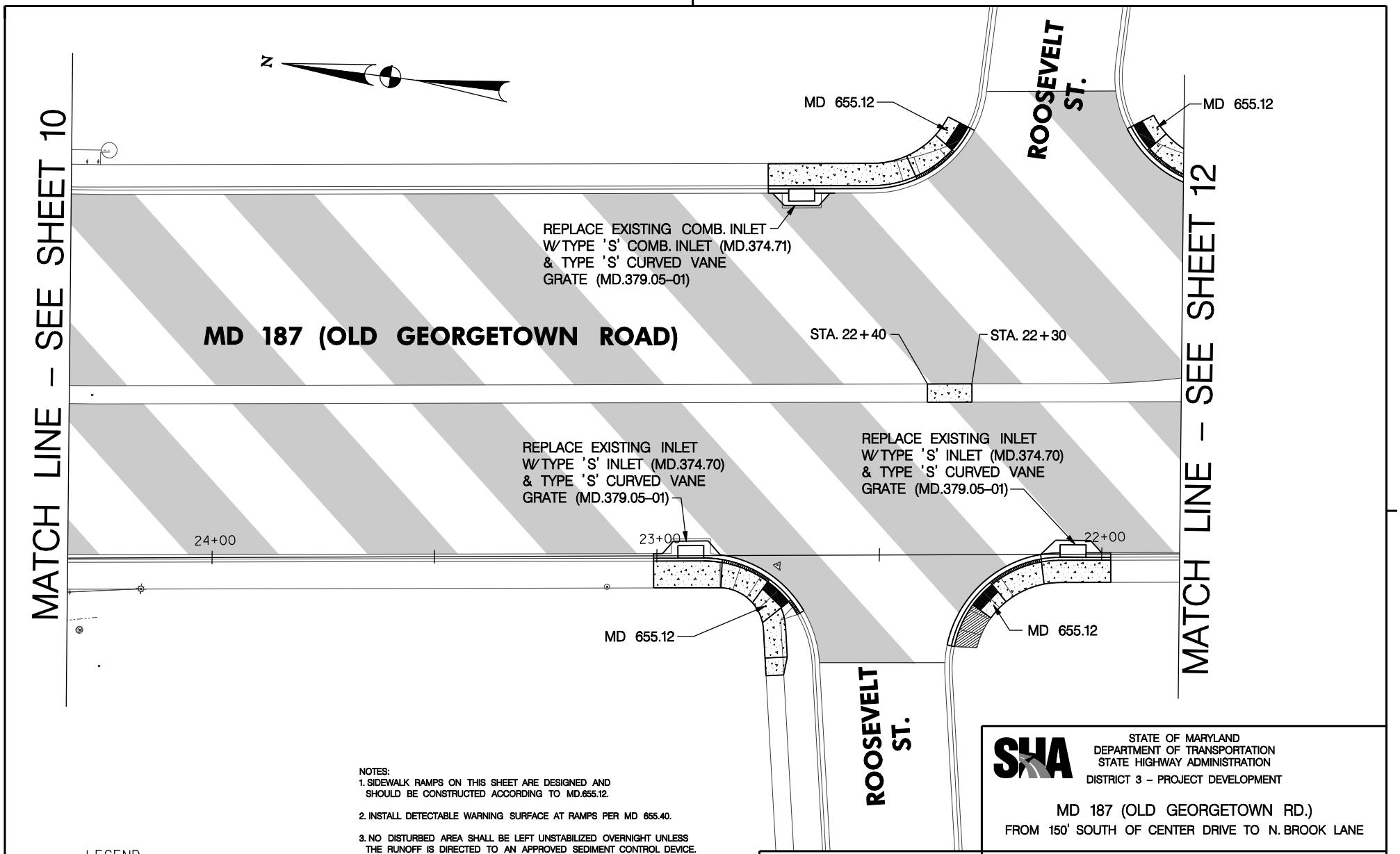


NOTES:
1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. INSTALL DETECTABLE WARNING SURFACE AT RAMPS PER MD 655.40.
3. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
4. NEW INLETS ARE TO BE TYPE 'S' (MD.374.70) OR TYPE 'S' COMB. (MD.374.71) WITH CURVED VANE GRATES (MD.379.05–01)
5. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
6. SEE DRAWING DET–1 FOR INLET CONCRETE COLLAR DETAIL.
7. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE REMOVAL

CONCRETE SIDEWALK

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295177

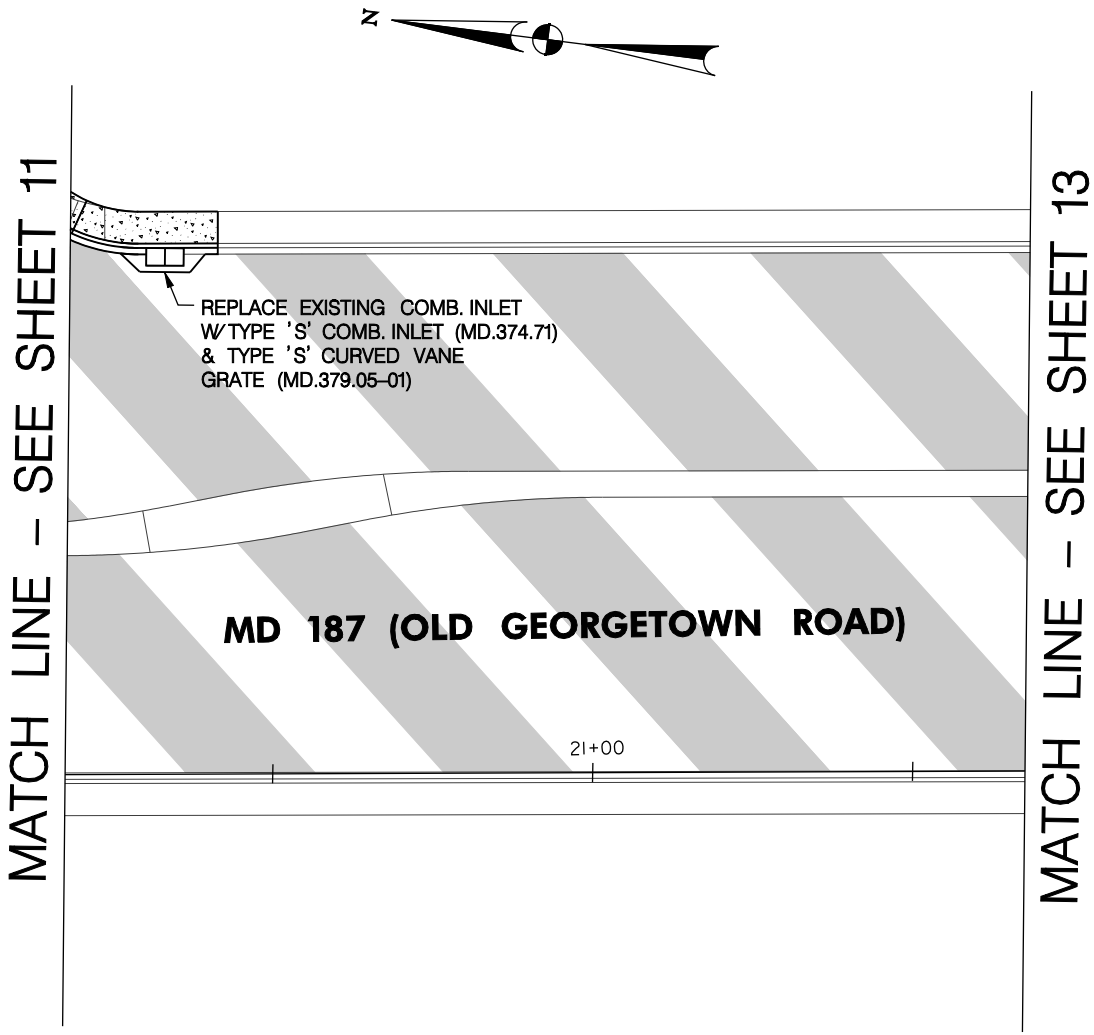
DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 11 OF 20

SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:25 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHD-0011_ MD187.dgn



LEGEND

- 1.5" GRIND
- 1.5" BASE
- 1.5" SURFACE
- CONCRETE REMOVAL
- CONCRETE SIDEWALK

NOTES:

1. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
2. NEW INLETS ARE TO BE TYPE 'S' COMB.(MD.374.71) WITH CURVED VANE GRATES (MD.379.05–01)
3. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
4. SEE DRAWING DET-1 FOR INLET CONCRETE COLLAR DETAIL.
5. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

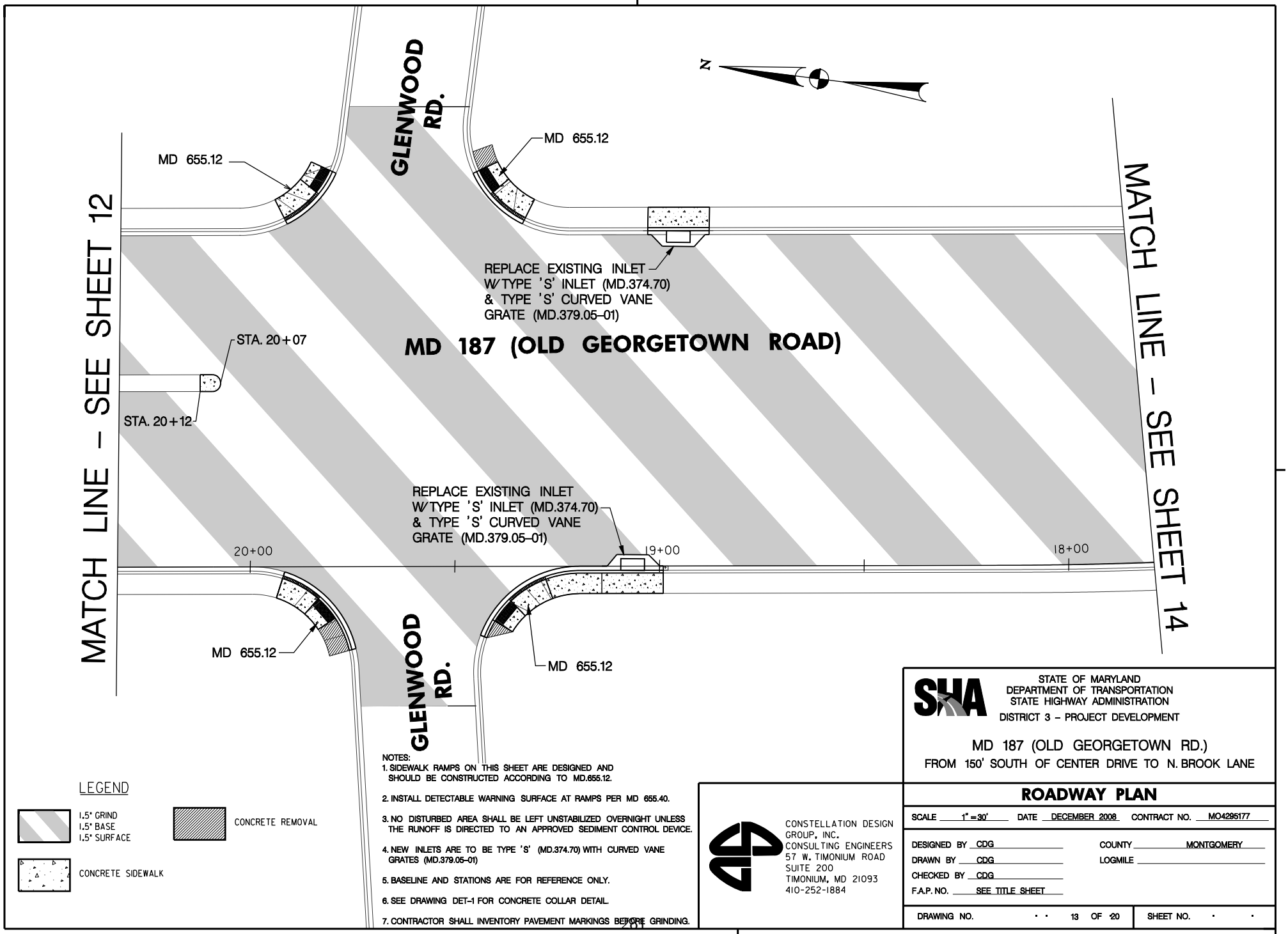
SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 12 OF 20 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:25 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHD-0012_ MD187.dgn



LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE REMOVAL

CONCRETE SIDEWALK

NOTES:

1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. INSTALL DETECTABLE WARNING SURFACE AT RAMPS PER MD 655.40.
3. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
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5. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
6. SEE DRAWING DET-1 FOR CONCRETE COLLAR DETAIL.
7. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
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SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 - PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 13 OF 20

SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:25 AM
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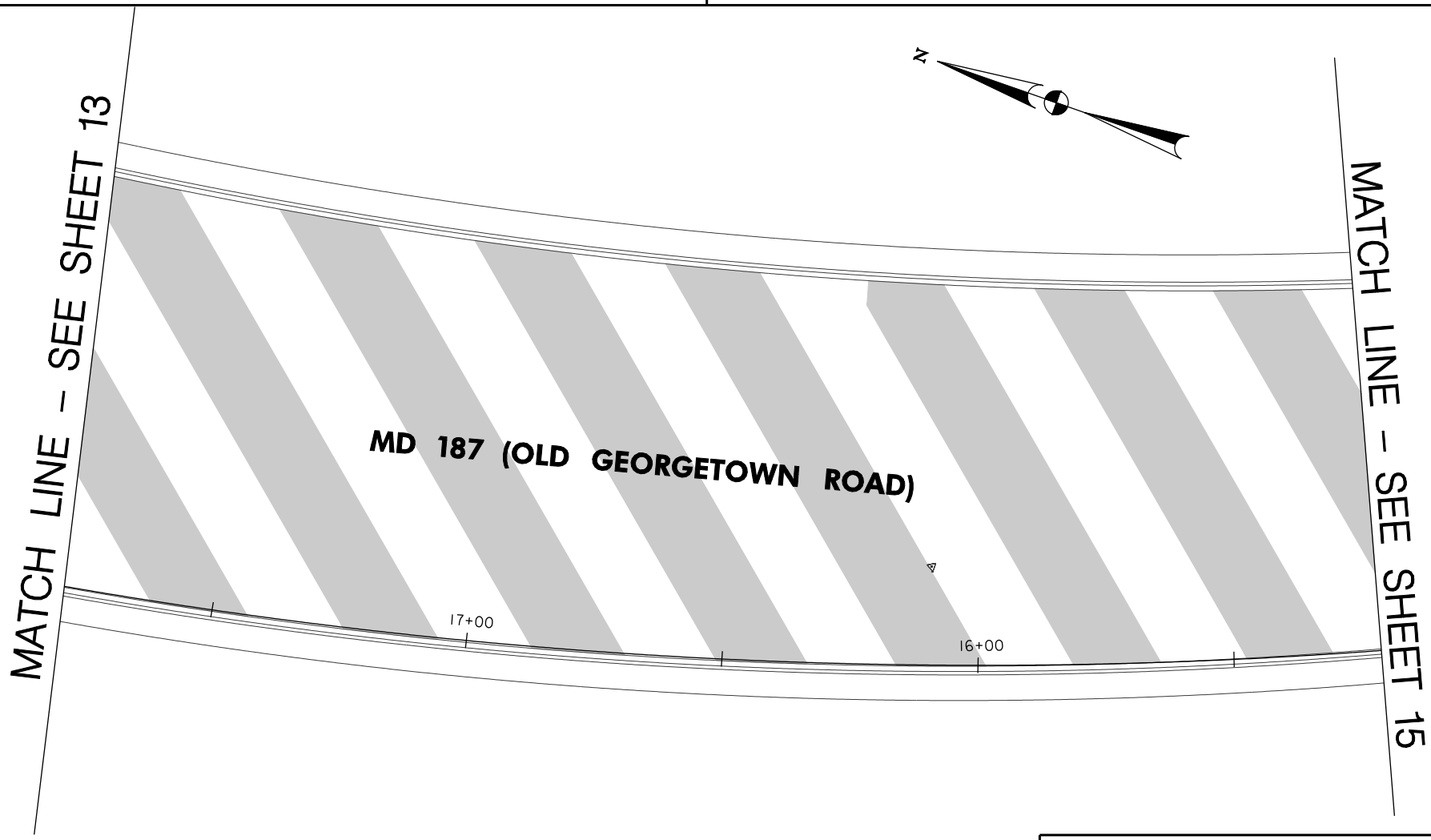

LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

NOTES:
1. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.

2. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.

3. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 - PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 14 OF 20

SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:26 AM
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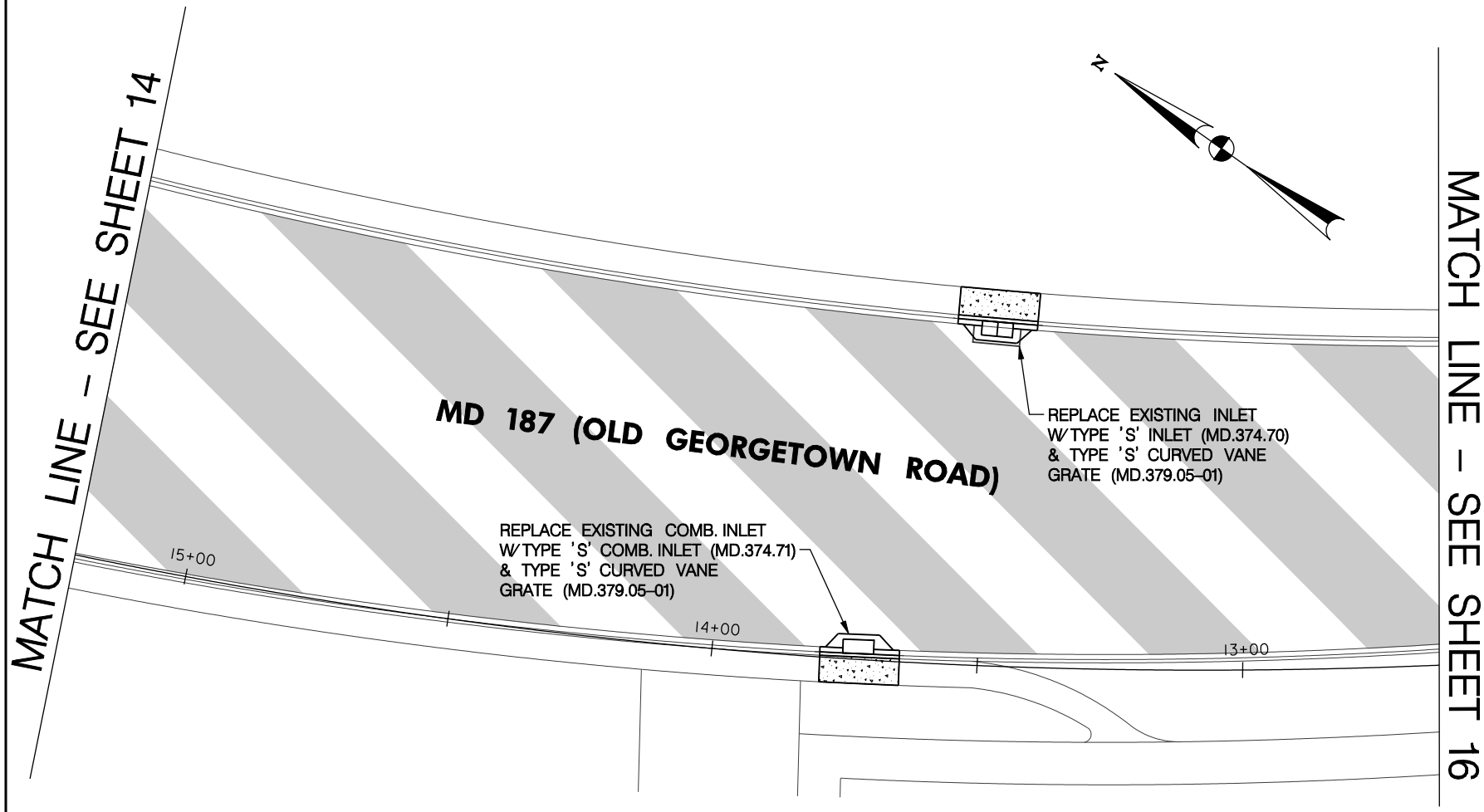

LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

NOTES:
1. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
2. NEW INLETS ARE TO BE TYPE 'S' (MD.374.70) OR TYPE 'S' (MD.374.71) WITH CURVED VANE GRATES (MD.379.05-01)
3. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
4. SEE DRAWING DET-1 FOR INLET CONCRETE COLLAR DETAIL.
5. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 - PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 15 OF 20 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:26 AM
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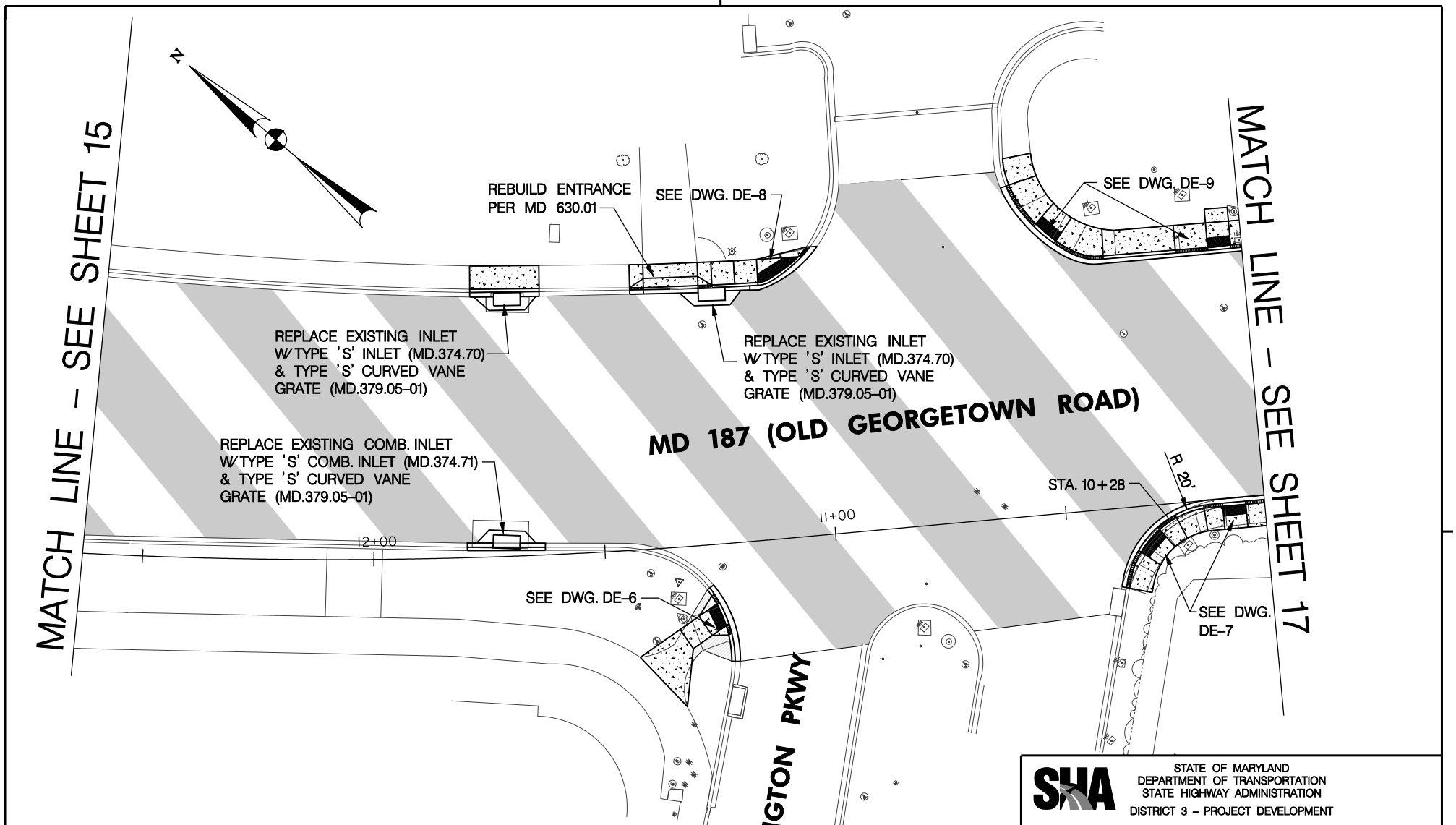

NOTES:
1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.11 AND MD.655.12.
2. INSTALL DETECTABLE WARNING SURFACE AT RAMPS PER MD 655.40.
3. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
4. NEW INLETS ARE TO BE TYPE 'S' (MD.374.70) OR TYPE 'S' COMB. (MD.374.71) WITH CURVED VANE GRATES (MD.379.05-01)
5. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
6. SEE DRAWING DET-1 FOR INLET CONCRETE COLLAR DETAIL.
7. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE REMOVAL

CONCRETE SIDEWALK

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 - PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 16 OF 20 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:26 AM
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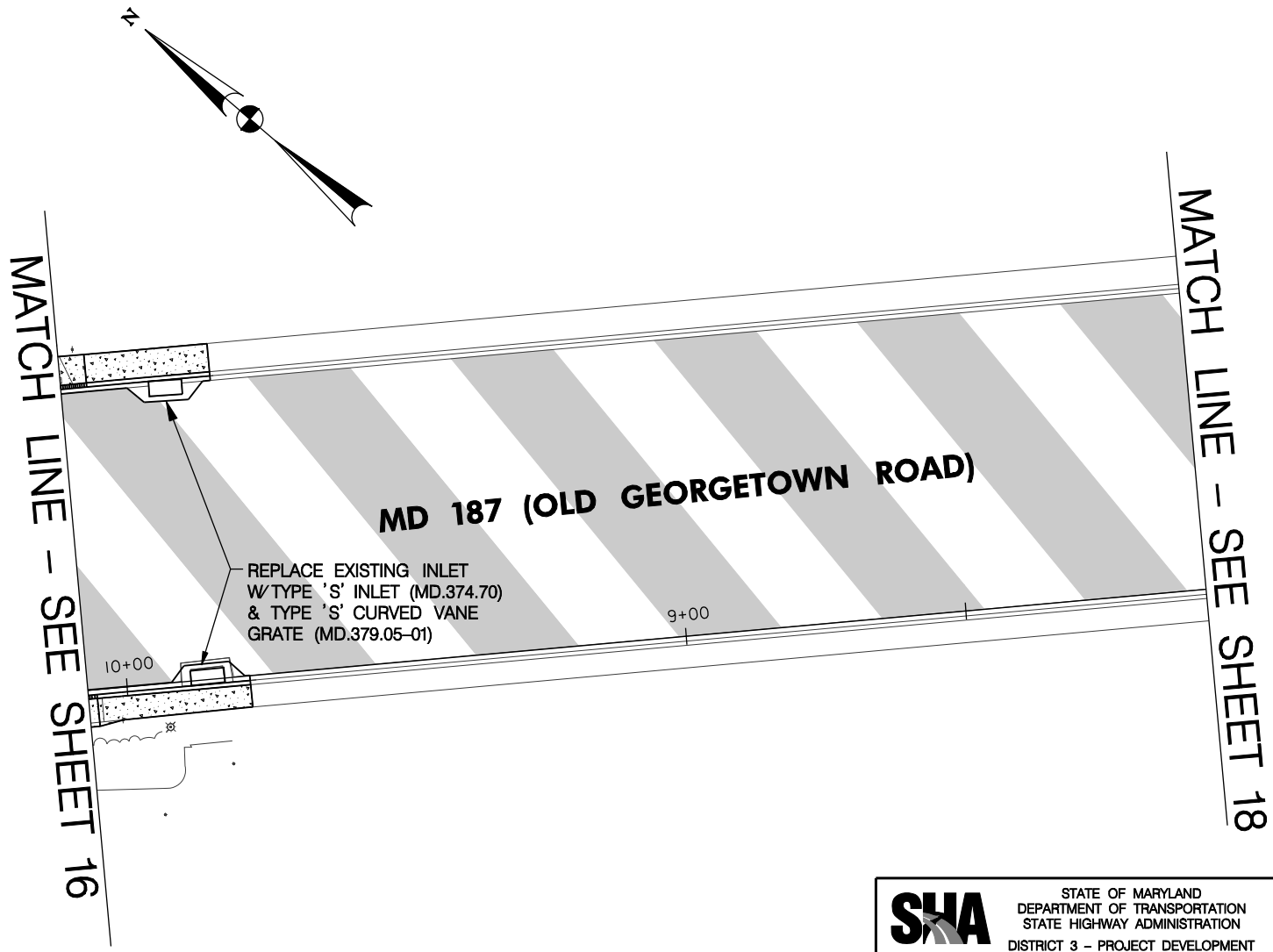

LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

NOTES:

1. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
2. NEW INLETS ARE TO BE TYPE 'S' (MD.374.70) WITH CURVED VANE GRATES (MD.379.05-01)
3. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
4. SEE DRAWING DET-1 FOR INLET CONCRETE COLLAR DETAIL.
5. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295177

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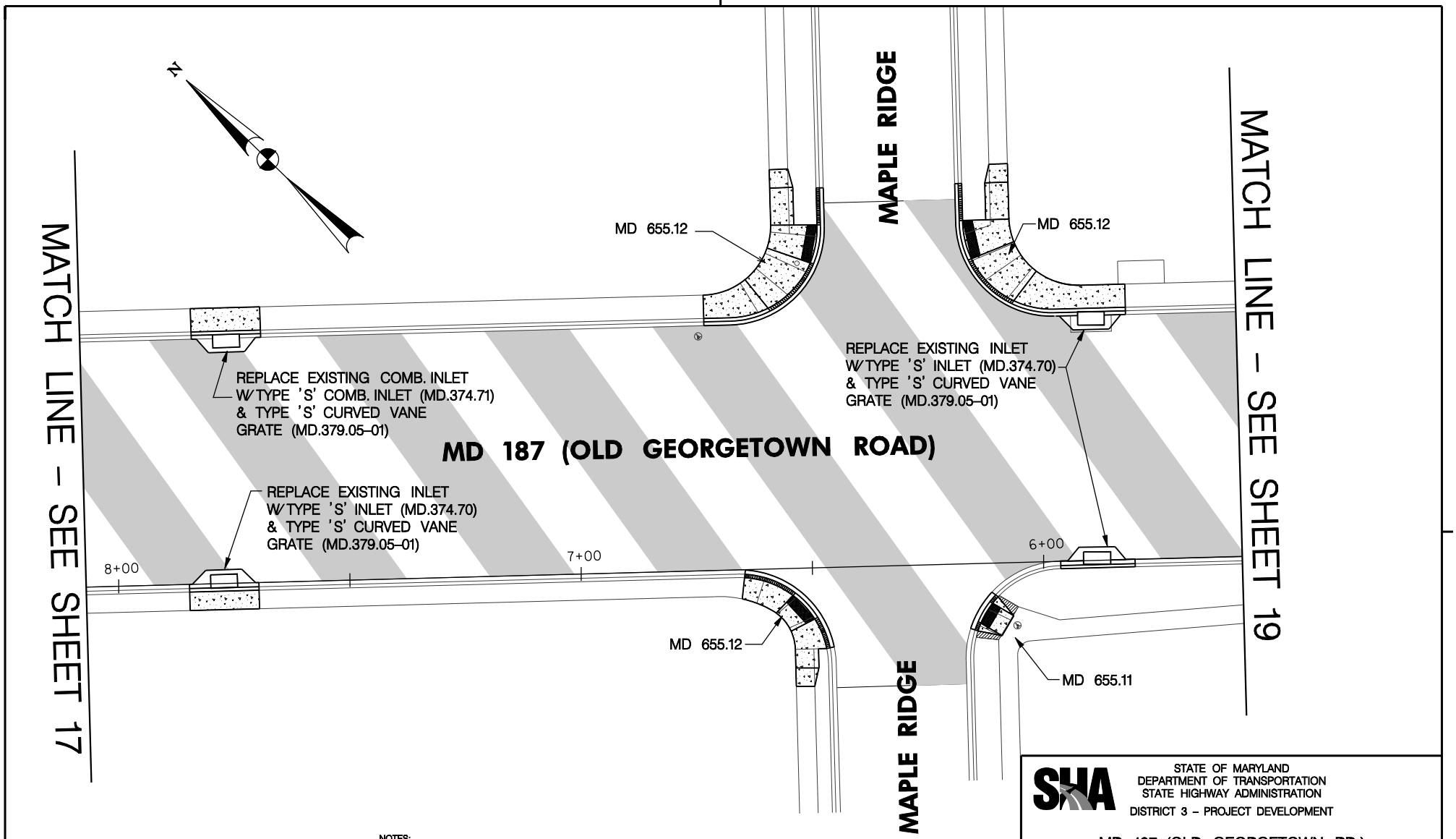
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 17 OF 20 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:27 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHD-0017_ MD187.dgn



NOTES:
1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.11 AND MD.655.12.
2. INSTALL DETECTABLE WARNING SURFACE AT RAMPS PER MD 655.40.
3. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
4. NEW INLETS ARE TO BE TYPE 'S' (MD.374.70) OR TYPE 'S' COMB. (MD.374.71) WITH CURVED VANE GRATES (MD.379.05-01)
5. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
6. SEE DRAWING DET-1 FOR INLET CONCRETE COLLAR DETAIL.
7. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE REMOVAL

CONCRETE SIDEWALK

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 18 OF 20 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:27 AM
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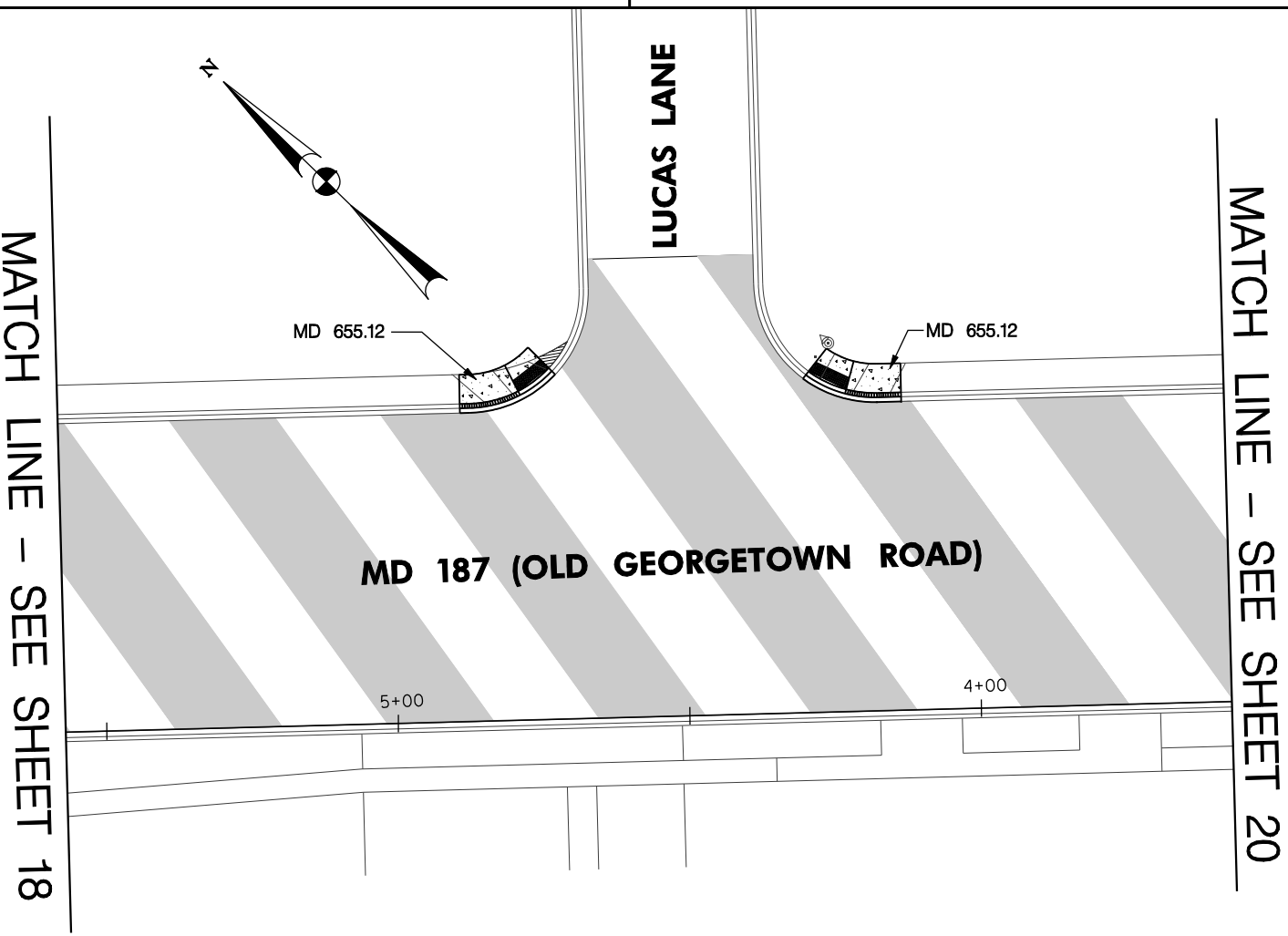

LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE REMOVAL

CONCRETE SIDEWALK

NOTES:
1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. INSTALL DETECTABLE WARNING SURFACE AT RAMPS PER MD 655.40.
3. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
4. NEW INLETS ARE TO BE TYPE 'S' (MD.374.70) WITH CURVED VANE GRATES (MD.379.05-01)
5. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
6. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 - PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 19 OF 20 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:27 AM
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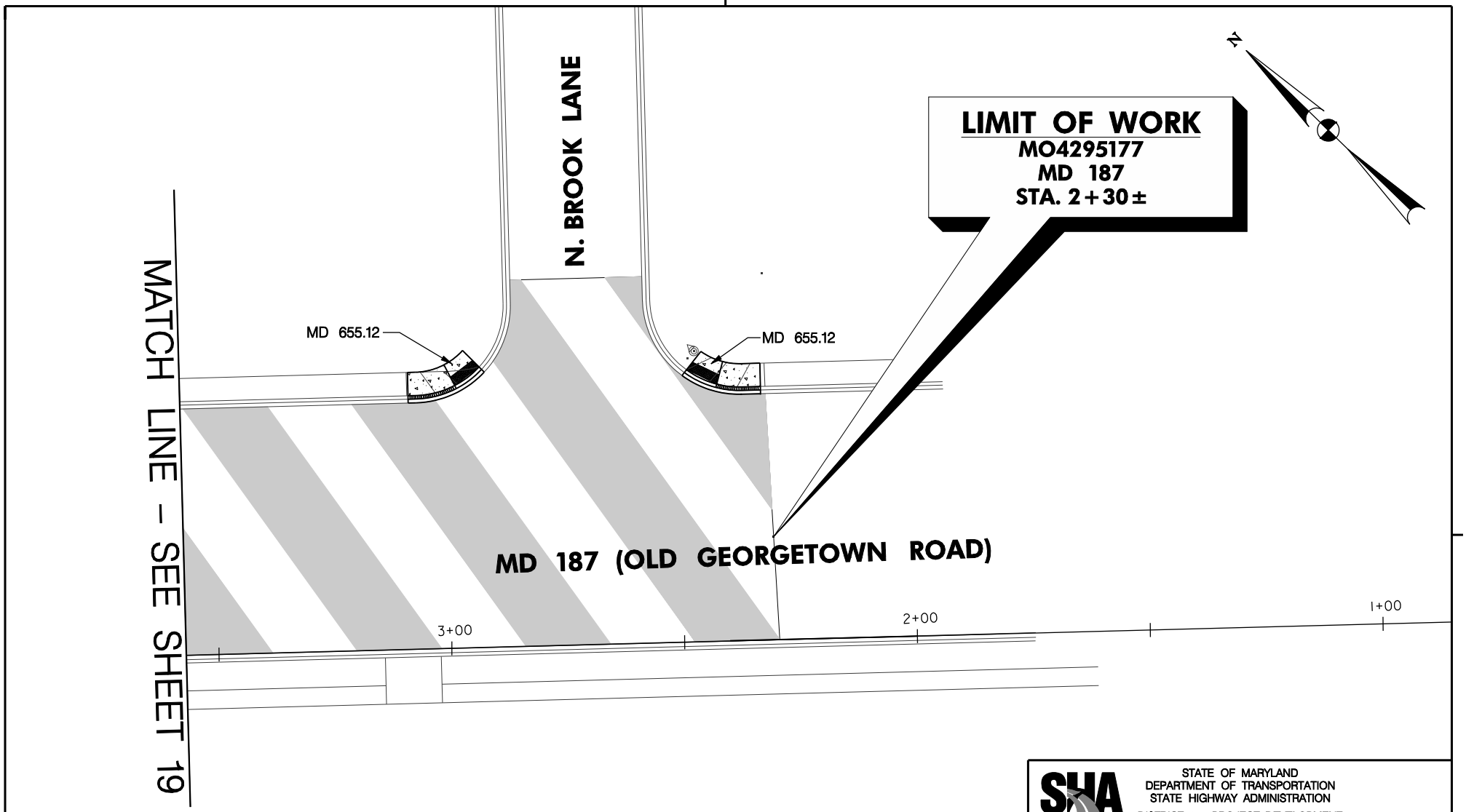

LEGEND

1.5" GRIND
1.5" BASE
1.5" SURFACE

CONCRETE SIDEWALK

NOTES:
1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. INSTALL DETECTABLE WARNING SURFACE AT RAMPS PER MD 655.40.
3. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
4. BASELINE AND STATIONS ARE FOR REFERENCE ONLY.
5. CONTRACTOR SHALL INVENTORY PAVEMENT MARKINGS BEFORE GRINDING.

SHA

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 - PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

ROADWAY PLAN

SCALE 1" = 30' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. 20 OF 20 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:28 AM
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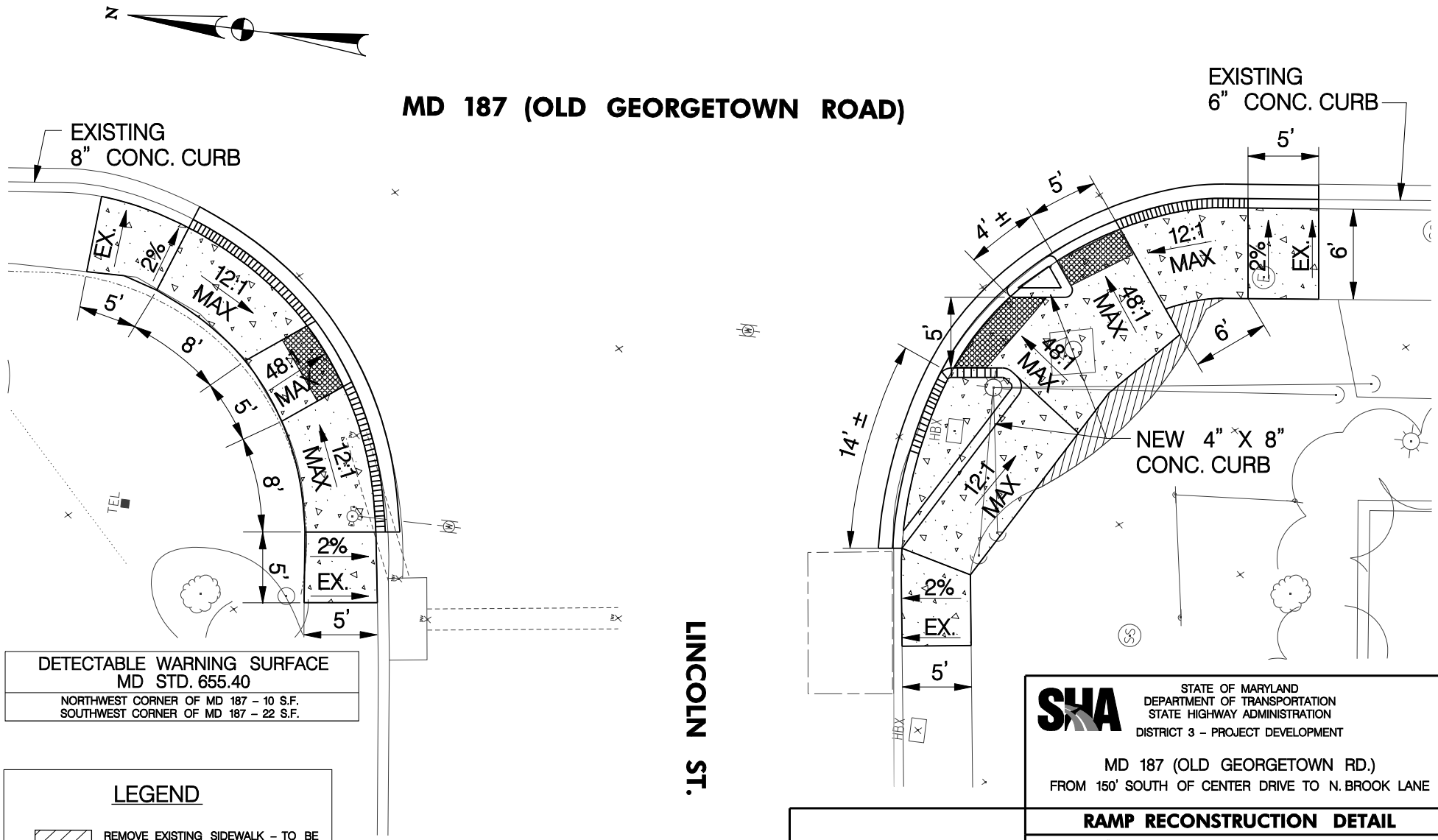

DETECTABLE WARNING SURFACE MD STD. 655.40
NORTHWEST CORNER OF MD 187 – 10 S.F.
SOUTHWEST CORNER OF MD 187 – 22 S.F.

LEGEND

- REMOVE EXISTING SIDEWALK – TO BE PAID FOR AS CLASS 2 EXCAVATION
- SIDEWALK RECONSTRUCTION
- TAPERED CURB

NOTES:
1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.11 AND MD.655.12.
2. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

SHA
STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

RAMP RECONSTRUCTION DETAIL

SCALE 1" = 10' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. DE 1 OF 9
SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:33 AM
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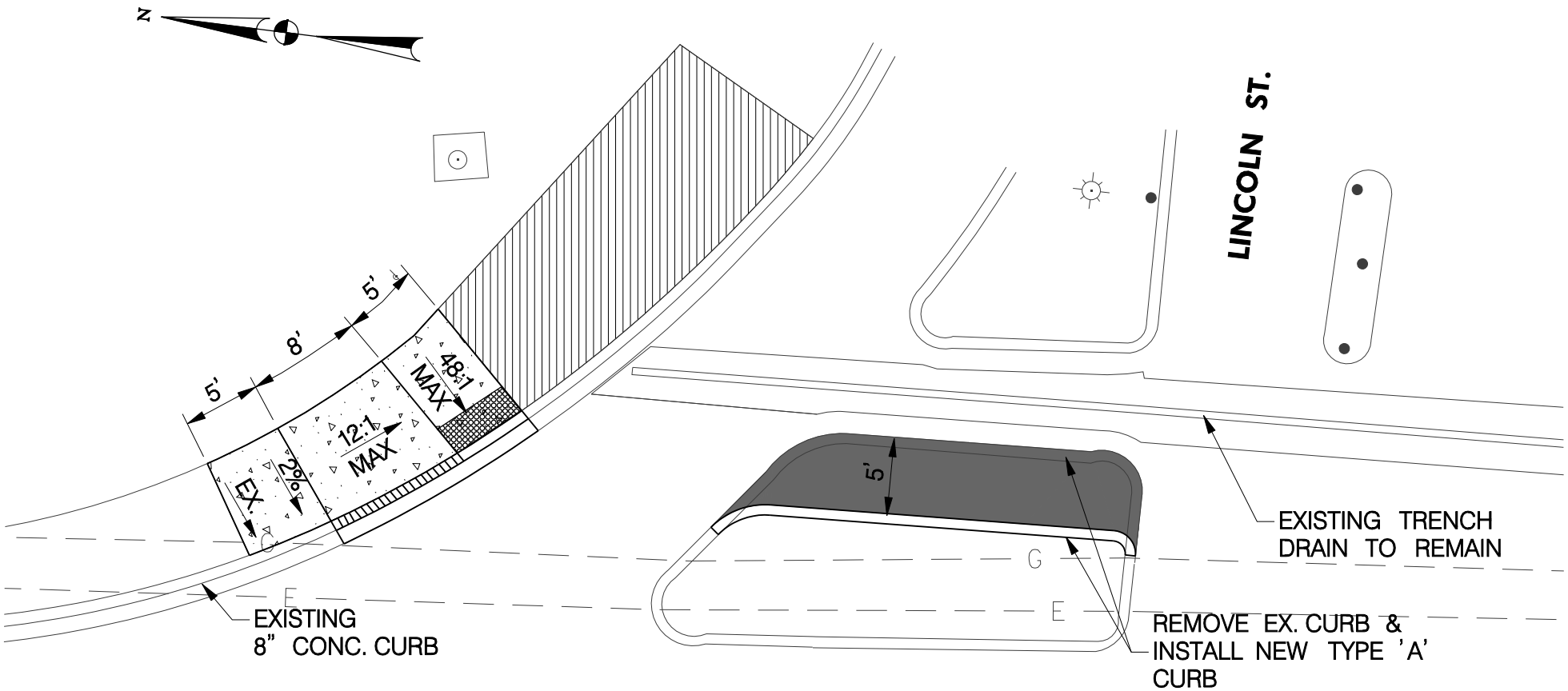

DETECTABLE WARNING SURFACE MD STD. 655.40
NORTHEAST CORNER OF MD 187 – 10 S.F.

MD 187 (OLD GEORGETOWN ROAD)

LEGEND

- REMOVE EXISTING SIDEWALK – TO BE PAID FOR AS CLASS 2 EXCAVATION
- SIDEWALK RECONSTRUCTION
- FULL DEPTH PAVING
- TAPERED CURB

NOTES:
1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

SHA
STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

RAMP RECONSTRUCTION DETAIL

SCALE 1" = 10' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET
COUNTY MONTGOMERY
LOGMILE

DRAWING NO. DE 2 OF 9 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:33 AM
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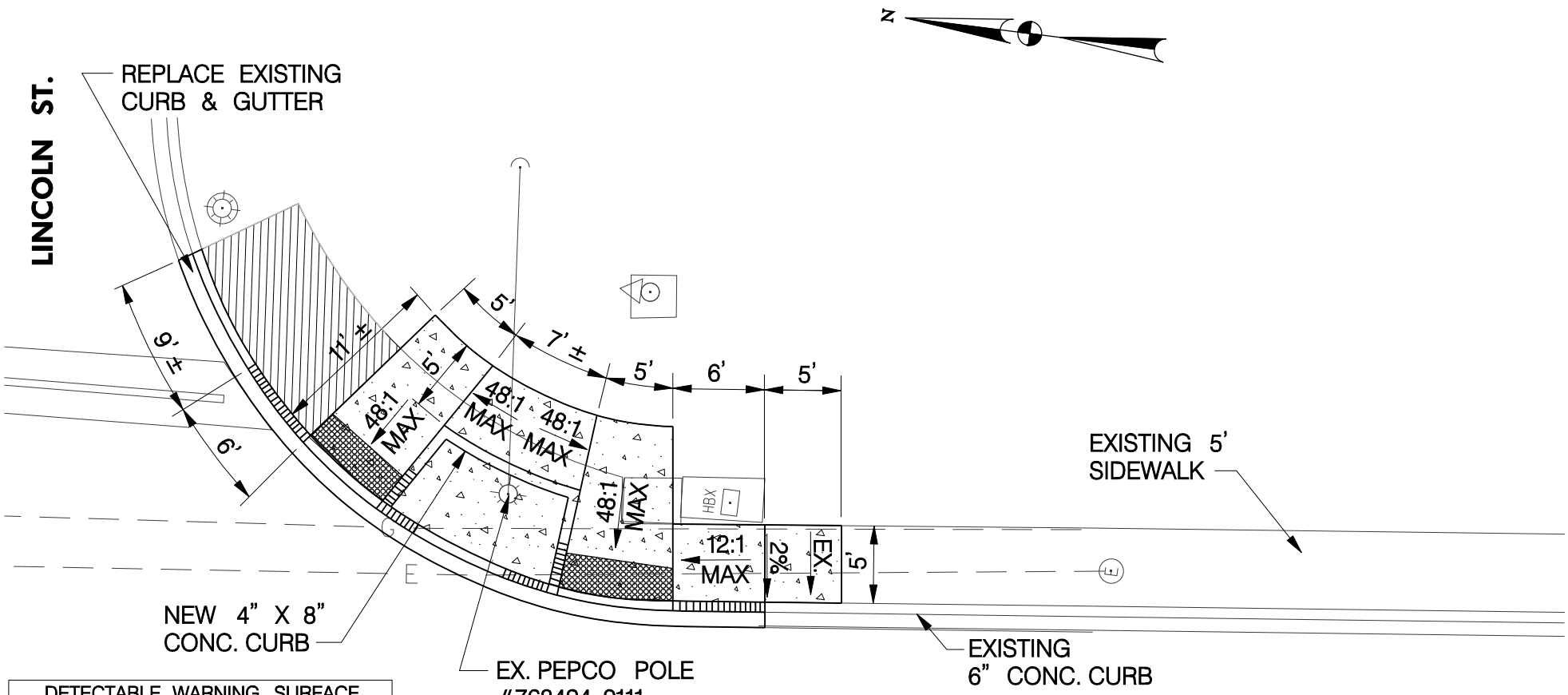

DETECTABLE WARNING SURFACE MD STD. 655.40
SOUTHEAST CORNER OF MD 187 – 28 S.F.

MD 187 (OLD GEORGETOWN ROAD)

LEGEND

- REMOVE EXISTING SIDEWALK – TO BE PAID FOR AS CLASS 2 EXCAVATION
- SIDEWALK RECONSTRUCTION
- TAPERED CURB

NOTES:
1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

RAMP RECONSTRUCTION DETAIL

SCALE 1" = 10' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET
COUNTY MONTGOMERY
LOGMILE

DRAWING NO. DE 3 OF 9 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:33 AM
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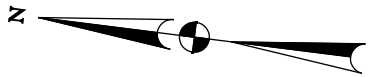
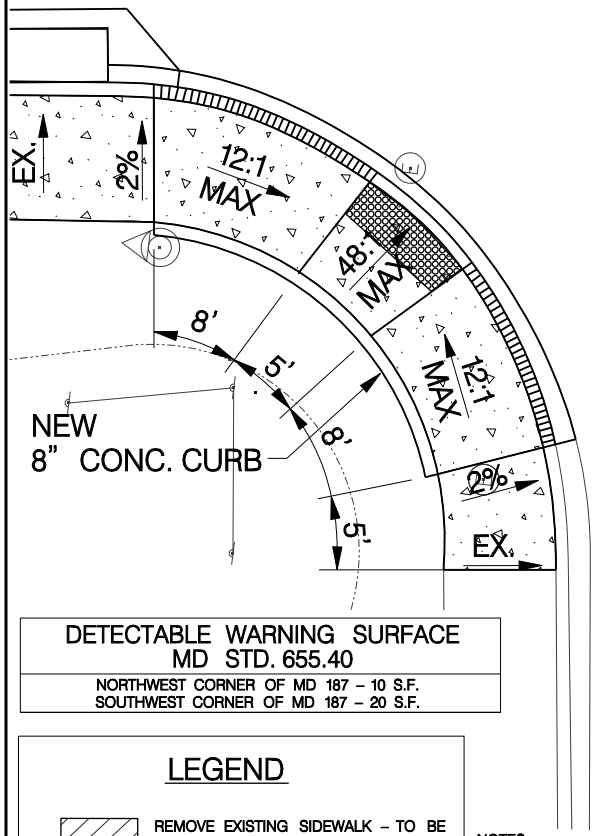
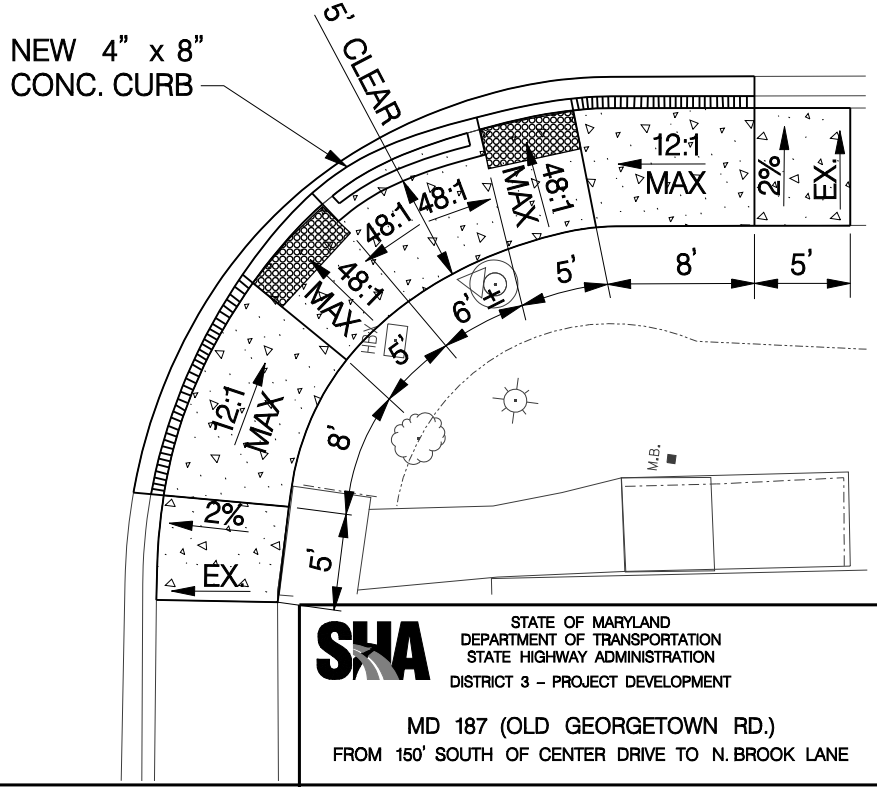


MD 187 (OLD GEORGETOWN ROAD)





McKINLEY ST.

DETECTABLE WARNING SURFACE MD STD. 655.40
NORTHWEST CORNER OF MD 187 – 10 S.F. SOUTHWEST CORNER OF MD 187 – 20 S.F.

LEGEND

- REMOVE EXISTING SIDEWALK – TO BE PAID FOR AS CLASS 2 EXCAVATION
- SIDEWALK RECONSTRUCTION
- TAPERED CURB

NOTES:

1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

SHA

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

RAMP RECONSTRUCTION DETAIL

SCALE 1" =10' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. DE 4 OF 9 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:34 AM
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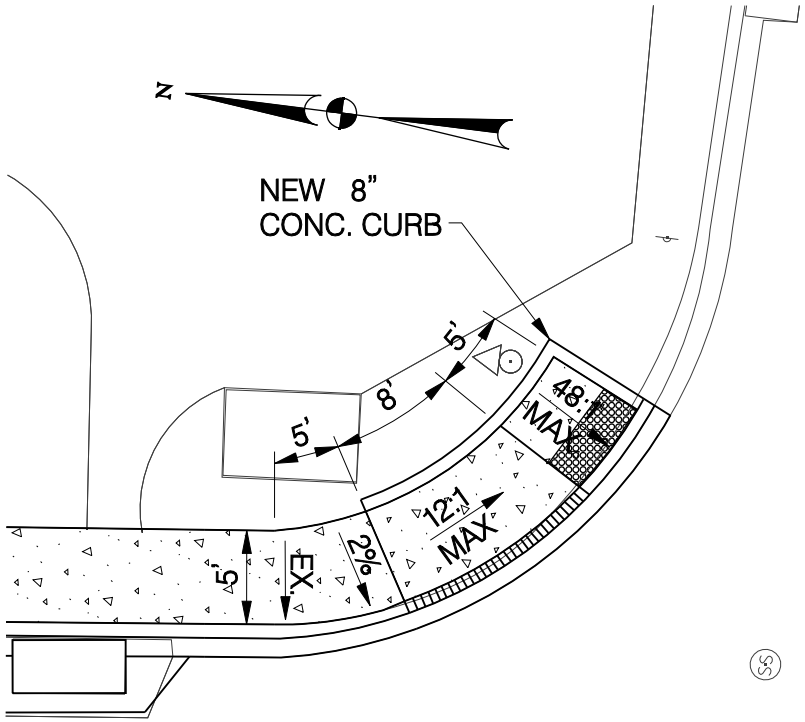
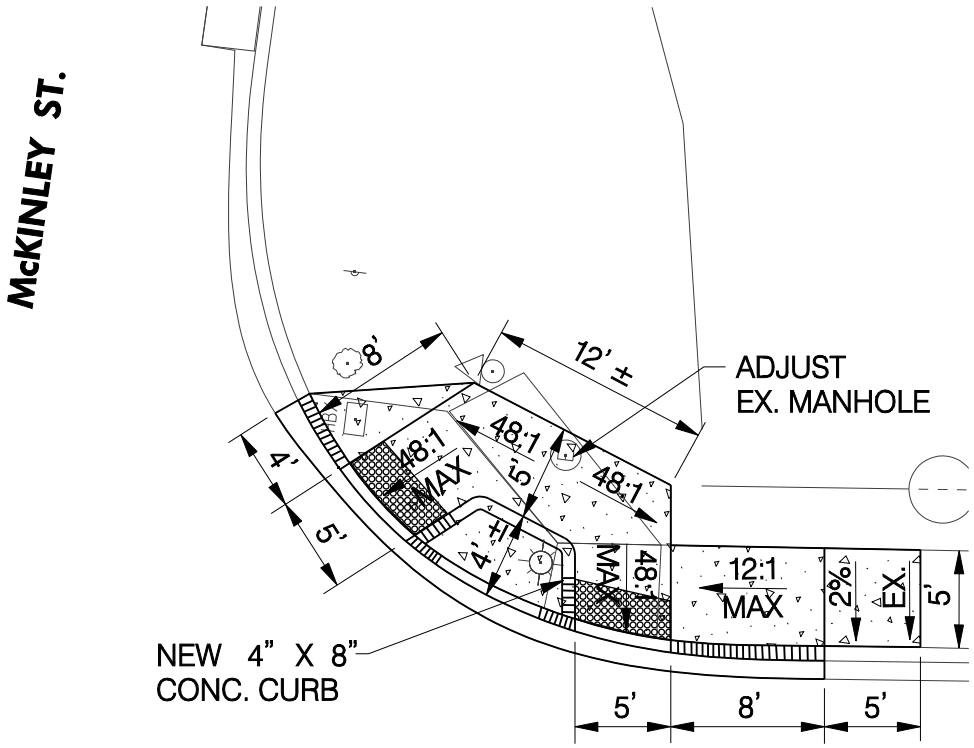




MD 187 (OLD GEORGETOWN ROAD)

DETECTABLE WARNING SURFACE MD STD. 655.40
NORTHEAST CORNER OF MD 187 – 10 S.F. SOUTHEAST CORNER OF MD 187 – 20 S.F.

LEGEND

- REMOVE EXISTING SIDEWALK – TO BE PAID FOR AS CLASS 2 EXCAVATION
- SIDEWALK RECONSTRUCTION
- TAPERED CURB

NOTES:
1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.11 AND MD.655.12.
2. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

RAMP RECONSTRUCTION DETAIL

SCALE 1" = 10' DATE DECEMBER 2008 CONTRACT NO. MO4295177

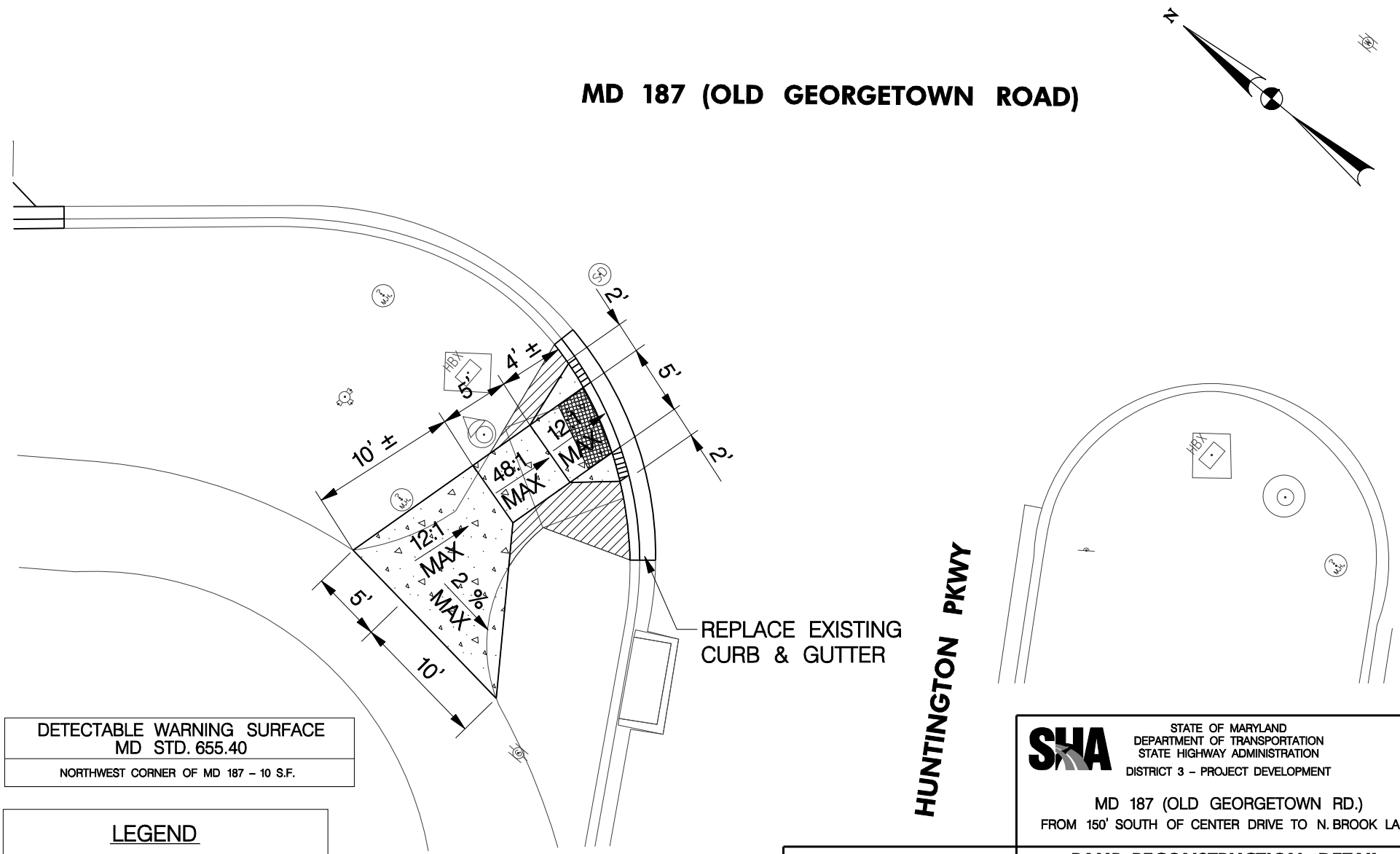
DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. DE 5 OF 9 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:34 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHT-0005_ MD187.dgn

MD 187 (OLD GEORGETOWN ROAD)



DETECTABLE WARNING SURFACE MD STD. 655.40
NORTHWEST CORNER OF MD 187 – 10 S.F.

LEGEND

- REMOVE EXISTING SIDEWALK – TO BE PAID FOR AS CLASS 2 EXCAVATION
- SIDEWALK RECONSTRUCTION
- TAPERED CURB

NOTES:
1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

RAMP RECONSTRUCTION DETAIL

SCALE 1" = 10' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. DE 6 OF 9 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 10:34 AM
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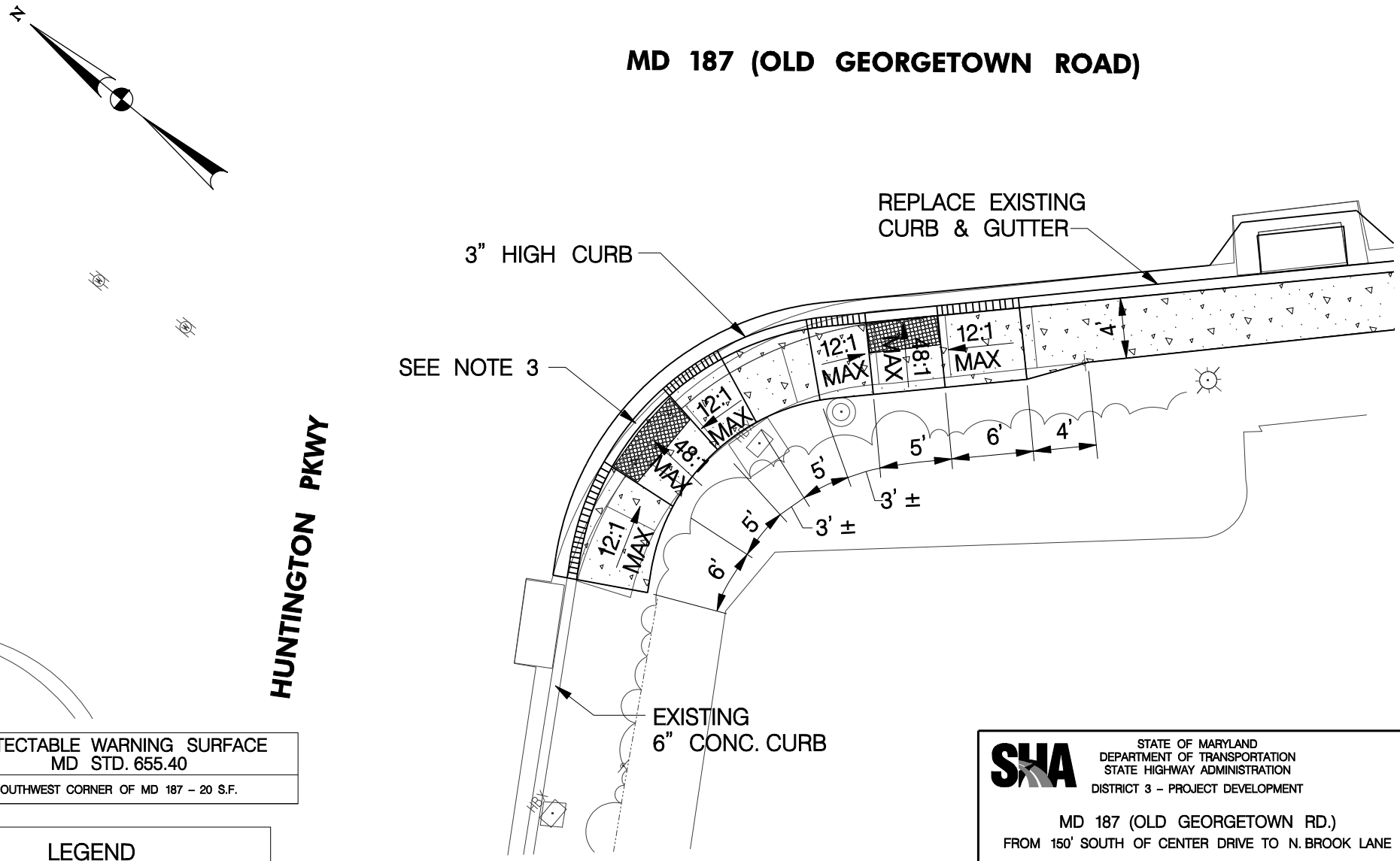

DETECTABLE WARNING SURFACE MD STD. 655.40
SOUTHWEST CORNER OF MD 187 – 20 S.F.

LEGEND

- REMOVE EXISTING SIDEWALK – TO BE PAID FOR AS CLASS 2 EXCAVATION
- SIDEWALK RECONSTRUCTION
- TAPERED CURB

NOTES:

1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
3. CONTRACTOR SHALL REBUILD EX. CURB AND GUTTER TO PROVIDE 5' CLEAR SIDEWALK WIDTH BETWEEN BACK OF CURB AND TRAFIIC SIGNAL POLE FOUNDATION.

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410-252-1884

SHA

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

RAMP RECONSTRUCTION DETAIL

SCALE 1" = 10' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. DE 7 OF 9 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 09:37 AM
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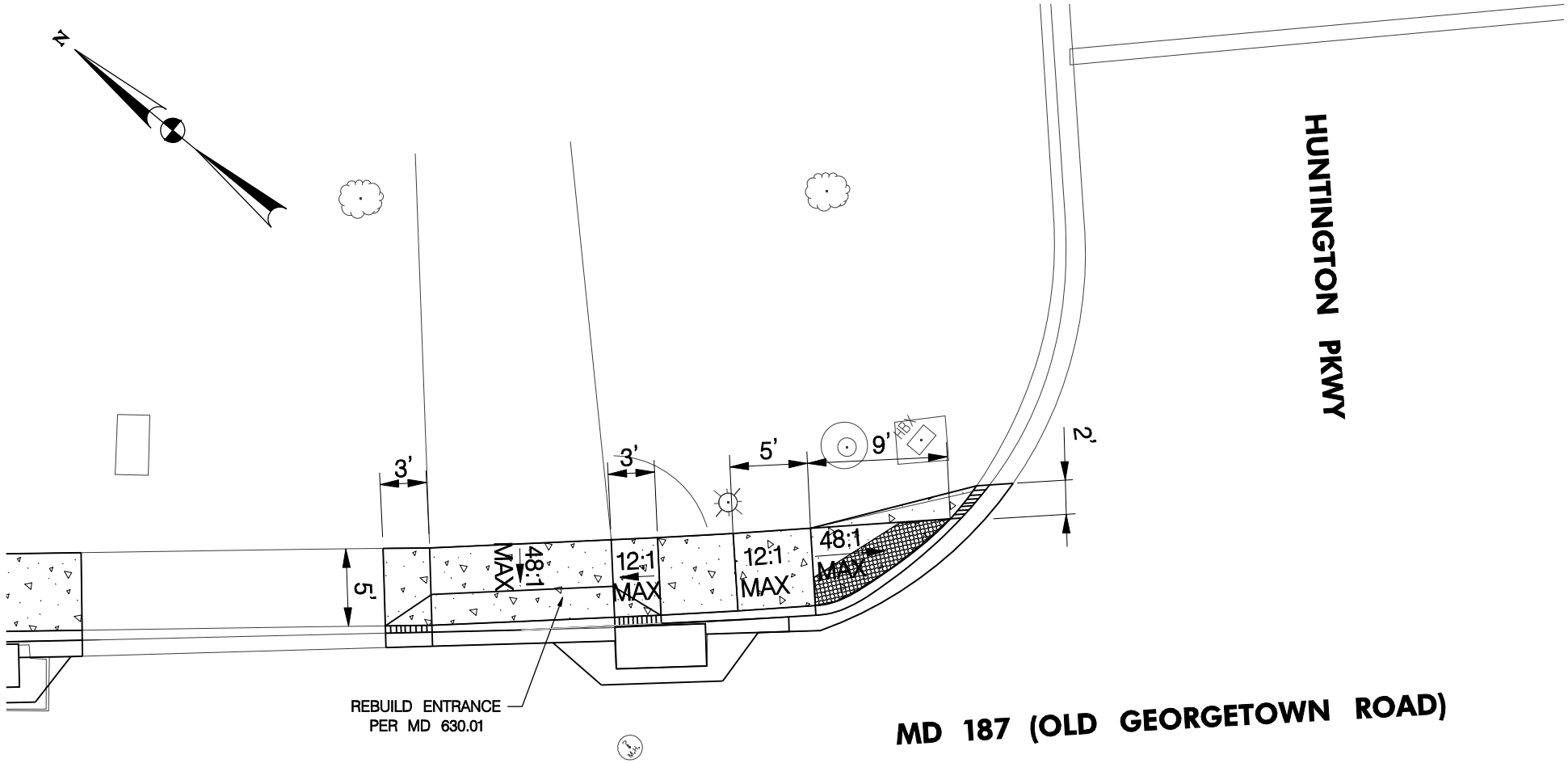

DETECTABLE WARNING SURFACE MD STD. 655.40
NORTHEAST CORNER OF MD 187 – 14 S.F.

LEGEND

- REMOVE EXISTING SIDEWALK – TO BE PAID FOR AS CLASS 2 EXCAVATION
- SIDEWALK RECONSTRUCTION
- TAPERED CURB

NOTES:
1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.11.
2. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
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SUITE 200
TIMONIUM, MD 21093
410-252-1884

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

RAMP RECONSTRUCTION DETAIL

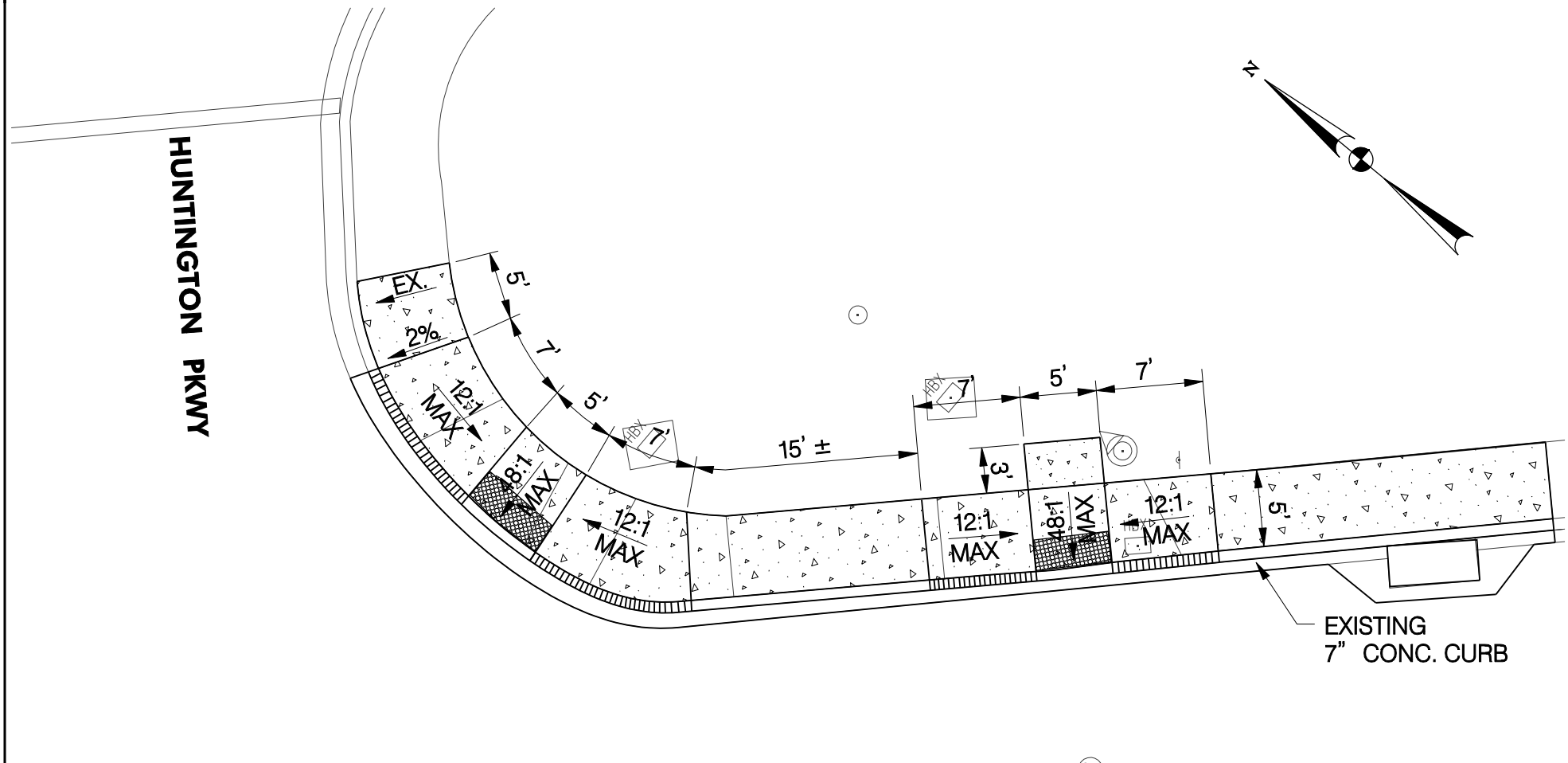
SCALE 1" = 10' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. DE 8 OF 9 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 09:37 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHT-0008_ MD187.dgn



DETECTABLE WARNING SURFACE MD STD. 655.40
SOUTHEAST CORNER OF MD 187 – 20 S.F.

MD 187 (OLD GEORGETOWN ROAD)

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

LEGEND

- REMOVE EXISTING SIDEWALK – TO BE PAID FOR AS CLASS 2 EXCAVATION
- SIDEWALK RECONSTRUCTION
- TAPERED CURB

NOTES:
1. SIDEWALK RAMPS ON THIS SHEET ARE DESIGNED AND SHOULD BE CONSTRUCTED ACCORDING TO MD.655.12.
2. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

RAMP RECONSTRUCTION DETAIL

SCALE 1" = 10' DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

DRAWING NO. DE 9 OF 9 SHEET NO.

PLOTTED: Monday, December 22, 2008 AT 09:38 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHT-0009_ MD187.dgn

State of Maryland State Highway Administration Pavement and Geotechnical Division	Contract:	MO4295168
	Project:	MD 187 – 150’ S of Center Drive to North Brook Lane
	Date:	February 2009 Page 1 of 8

Pavement Legend

1.	1.5”	Hot Mix Asphalt Superpave 9.5 mm, PG 76-22, 8 PV, Level 4
2.	1.5”	Hot Mix Asphalt Superpave 9.5 mm, for Base, PG 64-22, Level 2
3.	Variable Depth	Hot Mix Asphalt Superpave 25.0 mm - PG 64-22 for Full-depth Patching, Level 2 (3” minimum lift and 5” maximum lift thickness) (See Note 1)
4.	5”	Hot Mix Asphalt Superpave 25.0 mm - PG 64-22 for Partial-depth Patching, Level 2(See Notes 1 & 2)
5.		Top of Existing Pavement Surface prior to 1.5" Carbide Grinding
6.		Top of Existing Pavement Surface after 1.5" Carbide Grinding
7.		Top of Existing JPCP Surface
8.		Existing Curb and Gutter
9.		Standard Type A Combination Curb and Gutter
10.	9”	Portland Cement Concrete Mix No. 3 (See Note 4).
11.	6”	Graded Aggregate Base Course Incidental to Curb & Gutter
12.	6”	Graded Aggregate Base Course
13.	9”	Jointed Plain Portland Cement Concrete, Mix No. 9
14.		Top of Subgrade and Limit of Excavation

Notes:

1. Information from the construction history and pavement borings indicate the existing pavement structure:
NB MD 187, MP 0.73 to 1.00: 4.5” Bituminous Concrete over 6” DGSA
NB MD 187, MP 1.00 to 1.59: 6” – 14.75” Bituminous Concrete over 6” GAB
SB MD 187, MP 0.73 to 1.07: 9” – 12.5” Bituminous Concrete over 6” GAB
SB MD 187, MP 1.07 to 1.59: 1.5” – 4.75” Bituminous Concrete over 6.3” – 9” JPCP

2. Patch to JPCP Surface in composite pavement sections.

3. If necessary, use the following item for wedge/level, as directed by the Engineer: Variable Depth Hot Mix Asphalt Superpave 9.5 mm for Wedge/Level, PG 64-22, Level 2 (Maximum Lift 2”)

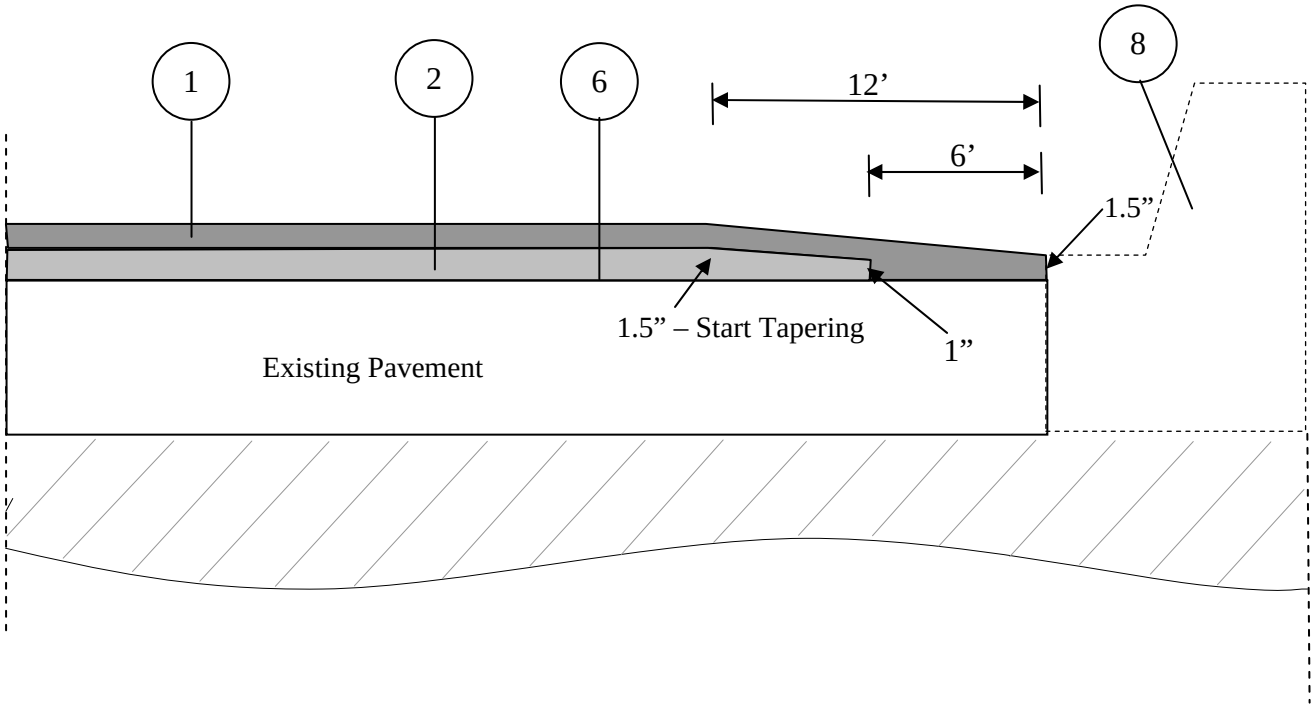
4. This work is to be done at the contractor’s option. An additional 1’ width (maximum) excavation may be used for curb and gutter form placement. The additional excavation width is to be filled with a minimum of 6” GAB and 8” Jointed Plain Portland Cement Concrete Mix No. 3 or Mix No. 9 to the bottom of the HMA course. The cost shall be incidental to the unit price of linear foot of curb and gutter. The transverse joints shall match those of the curb and gutter. Dowel bars are not necessary.

SCALE: NONE	DRAWN BY: RRR	APPROVED BY: GMH

State of Maryland State Highway Administration Pavement and Geotechnical Division	Contract:	MO4295168
	Project:	MD 187 – 150’ S of Center Drive to North Brook Lane
	Date:	February 2009 Page 2 of 8

Pavement Section

MD 187 – Grind, Resurface, and Overlay

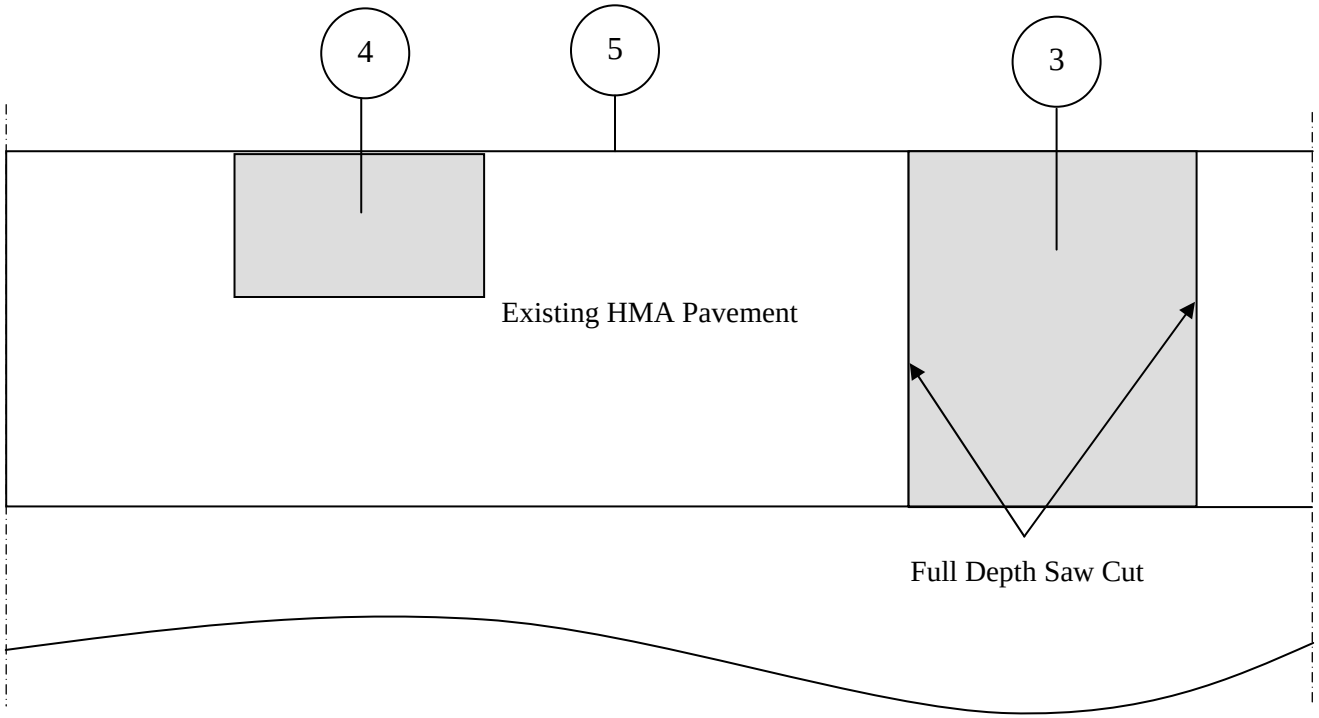


SCALE : NONE	DRAWN BY: RRR	APPROVED BY: GMH

State of Maryland State Highway Administration Pavement and Geotechnical Division	Contract:	MO4295168	
	Project:	MD 187 – 150’ S of Center Drive to North Brook Lane	
	Date:	February 2009	Page 3 of 8

Pavement Section

MD 187 – Full Depth and Partial Depth Patching for Flexible Pavement



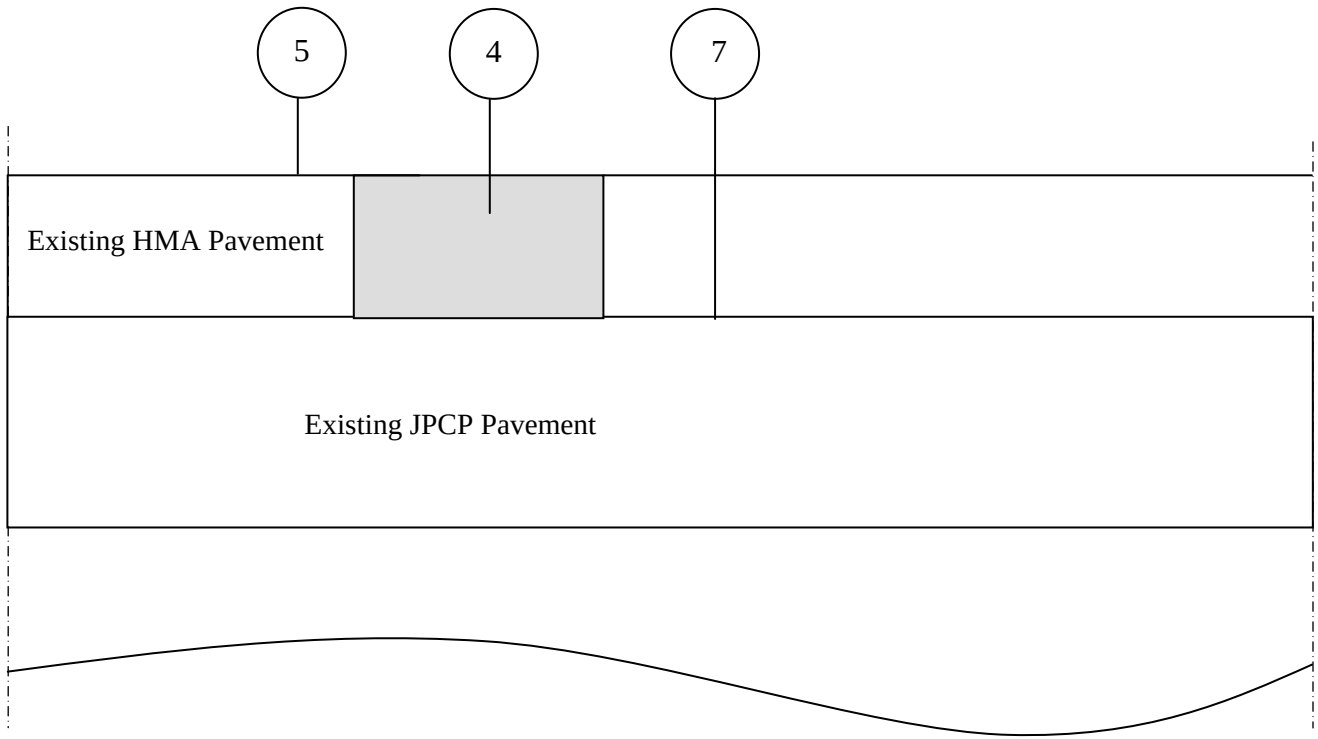
Note:
Full Depth Patch: If the underlying base layer is found to be deteriorated at the time of patch excavation, it should be removed and replaced with Graded Aggregate Base.

SCALE : NONE	DRAWN BY: RRR	APPROVED BY: GMH

State of Maryland State Highway Administration Pavement and Geotechnical Division	Contract:	MO4295168
	Project:	MD 187 – 150’ S of Center Drive to North Brook Lane
	Date:	February 2009 Page 4 of 8

Pavement Section

MD 187 – Partial Depth Patching for Composite Pavement

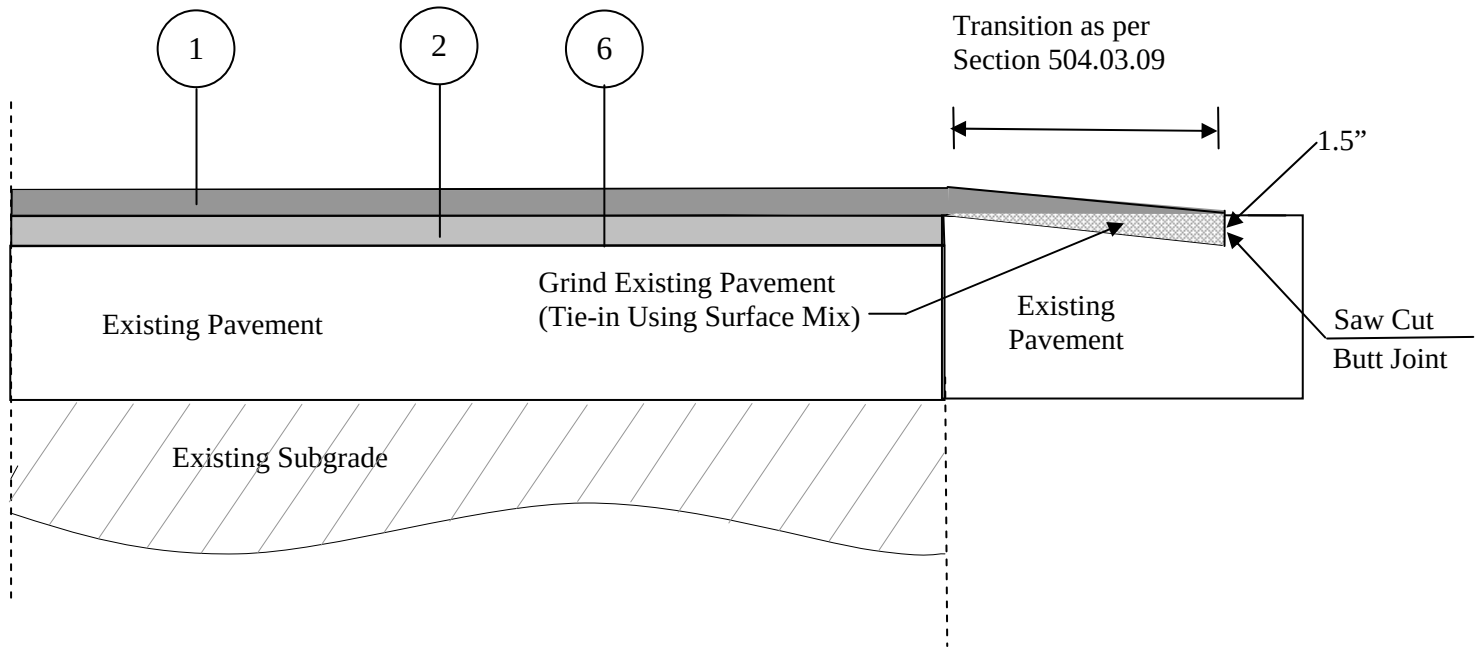


SCALE : NONE	DRAWN BY: RRR	APPROVED BY: GMH

State of Maryland State Highway Administration Pavement and Geotechnical Division	Contract:	MO4295168
	Project:	MD 187 – 150’ S of Center Drive to North Brook Lane
	Date:	February 2009 Page 5 of 8

Pavement Section

MD 187 – Longitudinal Transition



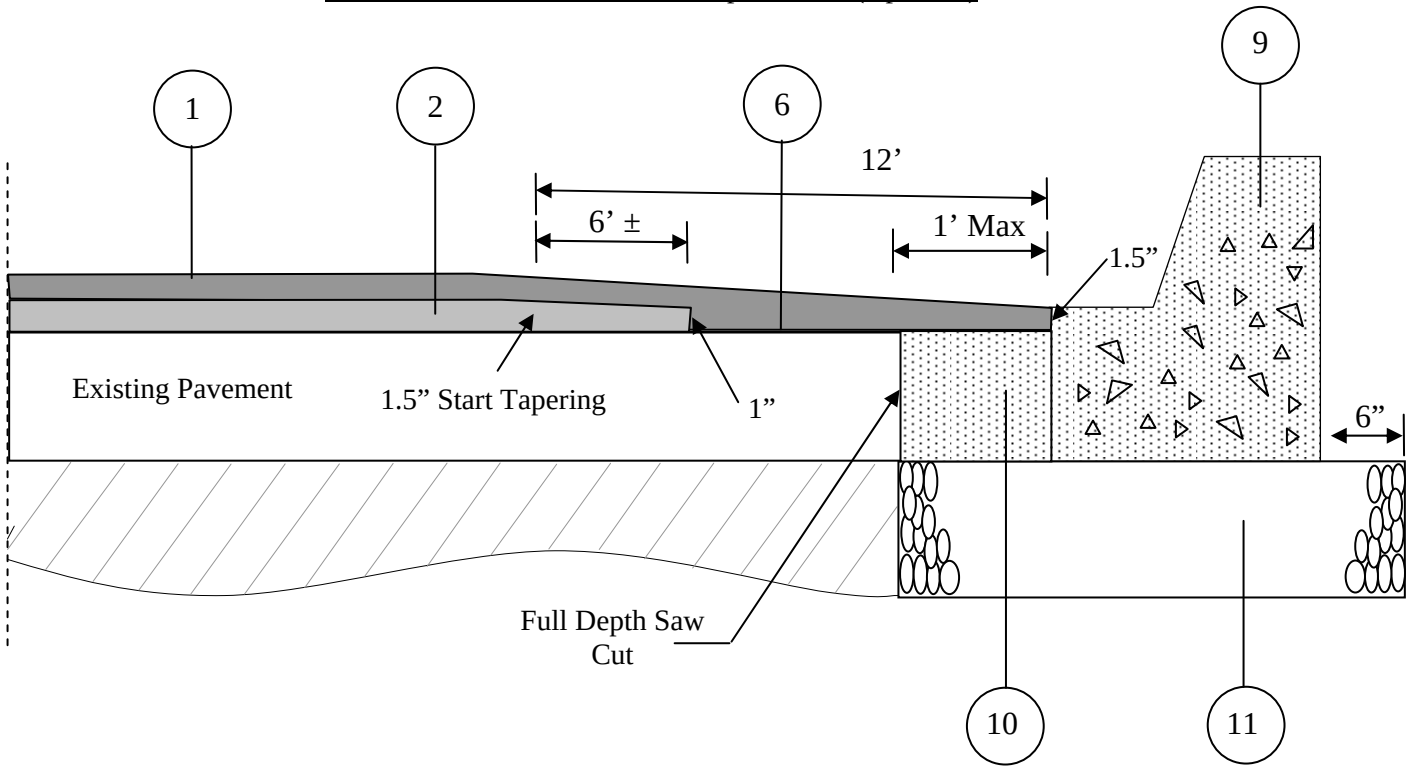
Note:
Carbide grinding for the tie-in will not be measured. It will be incidental to the paving items.

SCALE : NONE	DRAWN BY: RRR	APPROVED BY: GMH

State of Maryland State Highway Administration Pavement and Geotechnical Division	Contract:	MO4295168
	Project:	MD 187 – 150’ S of Center Drive to North Brook Lane
	Date:	February 2009 Page 6 of 8

Pavement Section

MD 187 – New Curb & Gutter Replacement (Option 1)

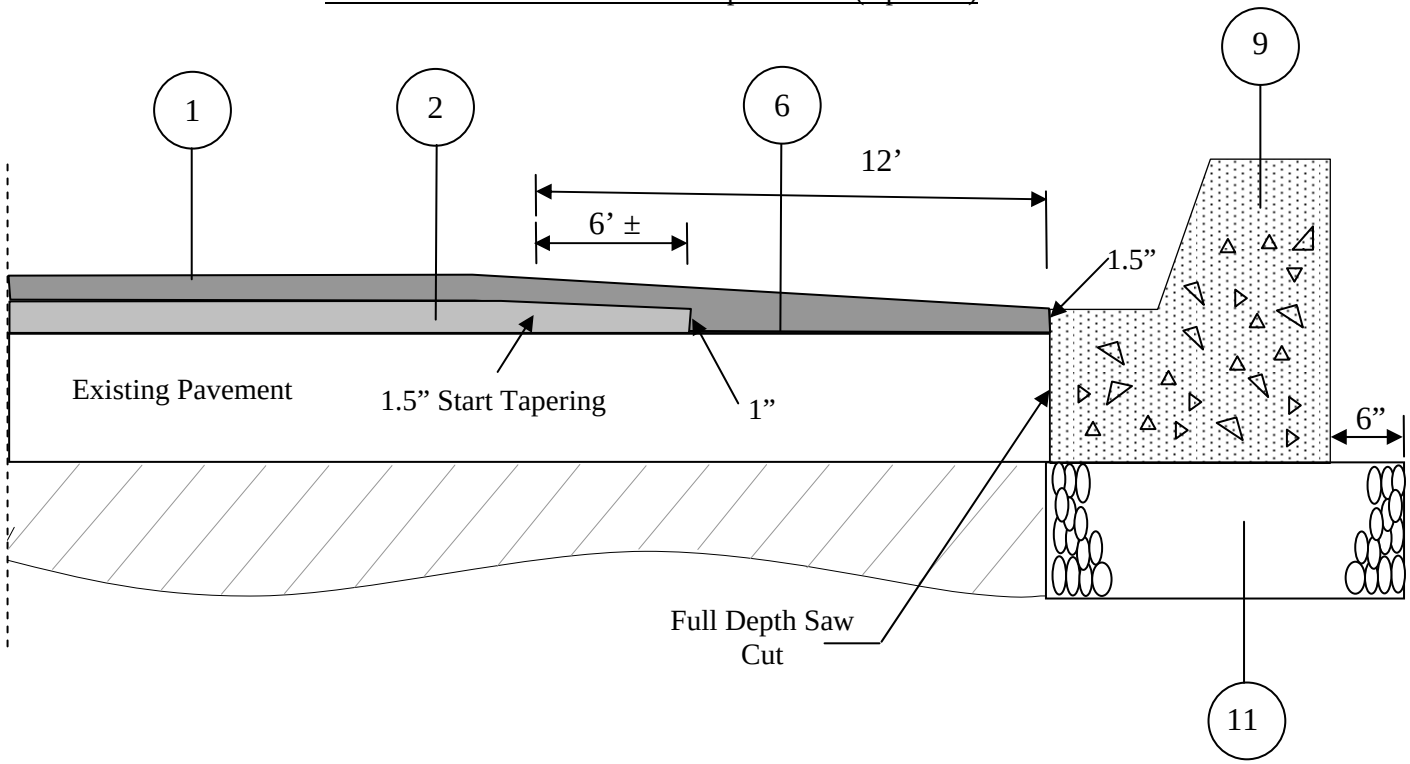


SCALE : NONE	DRAWN BY: RRR	APPROVED BY: GMH

State of Maryland State Highway Administration Pavement and Geotechnical Division	Contract:	MO4295168
	Project:	MD 187 – 150’ S of Center Drive to North Brook Lane
	Date:	February 2009 Page 7 of 8

Pavement Section

MD 187 – New Curb & Gutter Replacement (Option 2)

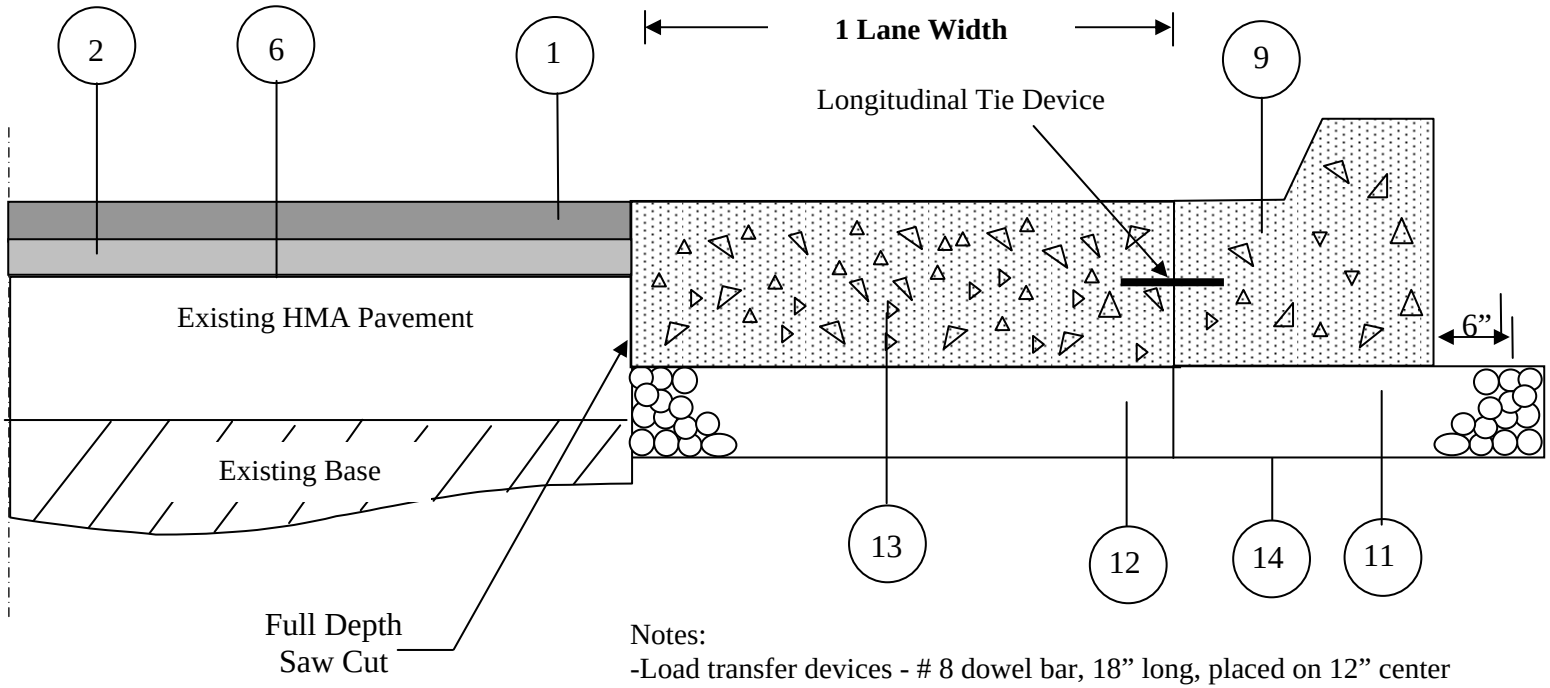


SCALE : NONE	DRAWN BY: RRR	APPROVED BY: GMH

State of Maryland State Highway Administration Pavement and Geotechnical Division	Contract:	MO4295168
	Project:	MD 187 – 150’ S of Center Drive to North Brook Lane
	Date:	February 2009 Page 8 of 8

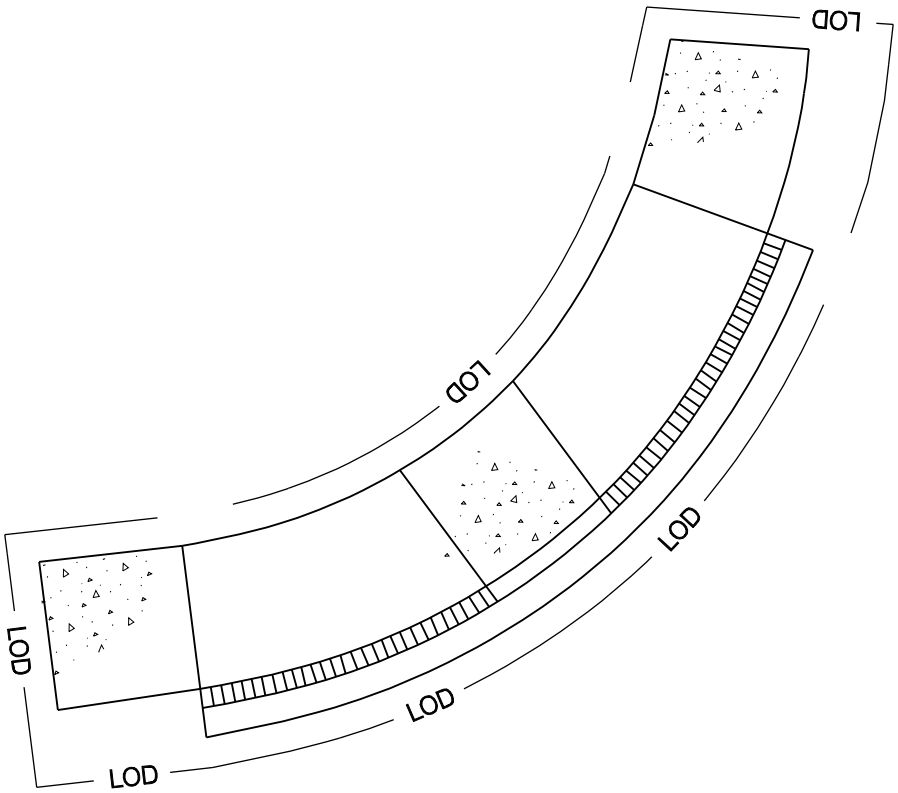
Pavement Section

MD 187 – PCC Bus Pad, Grinding, and Resurfacing



Notes:
-Load transfer devices - # 8 dowel bar, 18” long, placed on 12” center
-Longitudinal tie devices (at longitudinal joints and slab/curb interfaces) - # 4 “J” bar, 14” long, placed on 36” center. Maximum Joint Spacing 15 ft.
-PCC bus pad dimension: 80’ to 100’ long by one lane wide

SCALE : NONE	DRAWN BY: RRR	APPROVED BY: GMH



PLAN – SIDEWALK RAMP

NOTE:
LIMIT OF DISTURBANCE –
MAXIMUM 1' BEYOND SAWCUT.

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

TYPICAL LIMIT OF DISTURBANCE

SCALE NTS DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

CONSTELLATION DESIGN GROUP, INC.
CONSULTING ENGINEERS
57 W. TIMONIUM ROAD
SUITE 200
TIMONIUM, MD 21093
410-252-1884

DRAWING NO. DET-2 OF 2 SHEET NO. · ·

PLOTTED: Monday, December 22, 2008 AT 10:36 AM
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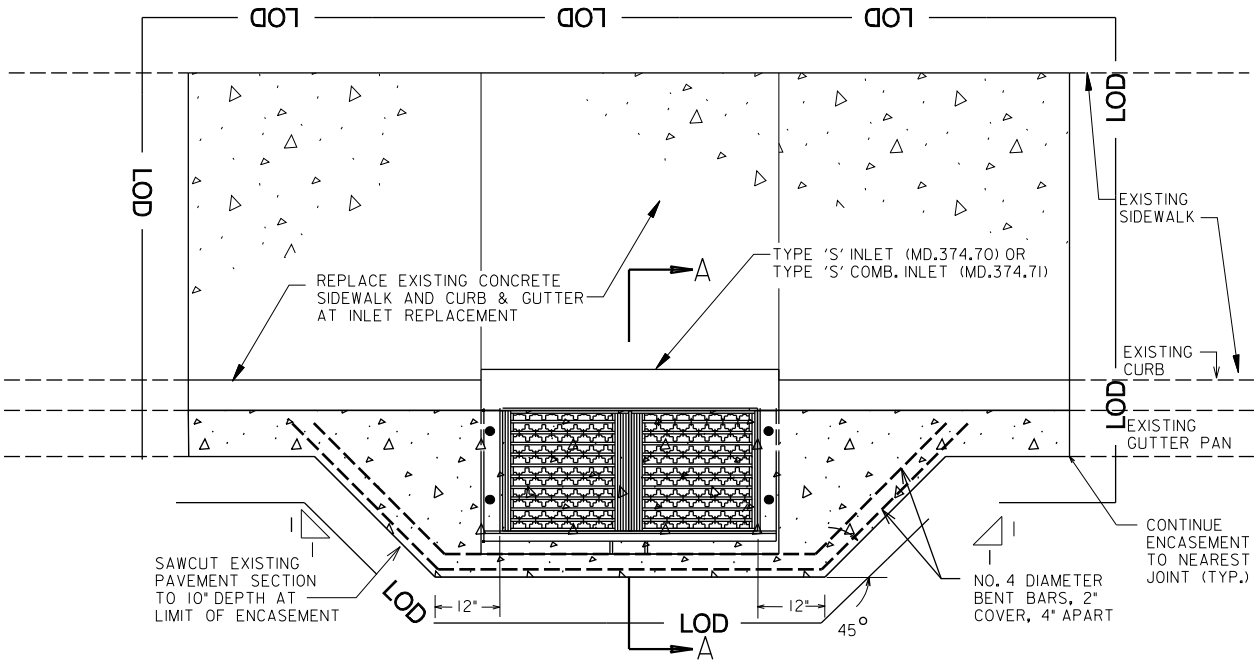


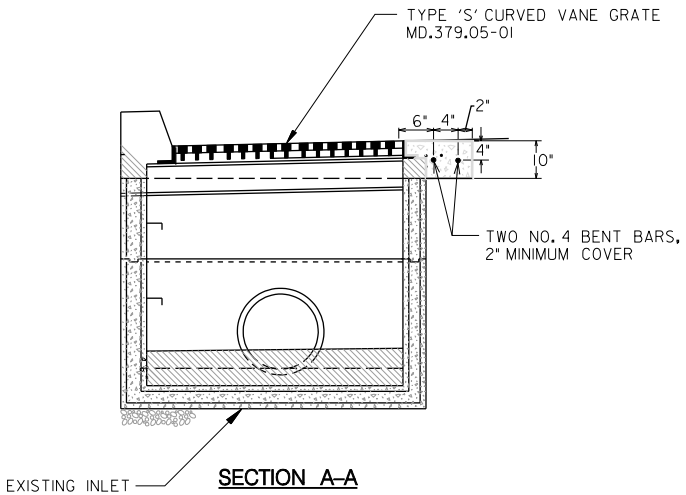
PLAN – INLET AT CURB

NOTES:

1. SURFACE OF CONCRETE TO BE SLOPED TO MATCH PAVEMENT AND GUTTER CROSS SECTION

2. CONCRETE SHALL BE MIX NO. 6 AND SHALL CONFORM TO SECTION 522.02.01 OF THE SPECIFICATIONS.

3. LIMIT OF DISTURBANCE MAXIMUM 1' BEYOND SAWCUT.



SECTION A–A

CONCRETE COLLAR FOR GRATE INLET
NTS

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DISTRICT 3 – PROJECT DEVELOPMENT

MD 187 (OLD GEORGETOWN RD.)
FROM 150' SOUTH OF CENTER DRIVE TO N. BROOK LANE

CONCRETE COLLAR DETAIL

SCALE NTS DATE DECEMBER 2008 CONTRACT NO. MO4295177

DESIGNED BY CDG
DRAWN BY CDG
CHECKED BY CDG
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE

CONSTELLATION DESIGN GROUP, INC.
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SUITE 200
TIMONIUM, MD 21093
410-252-1884

DRAWING NO. DET-1 OF 2 SHEET NO. · ·

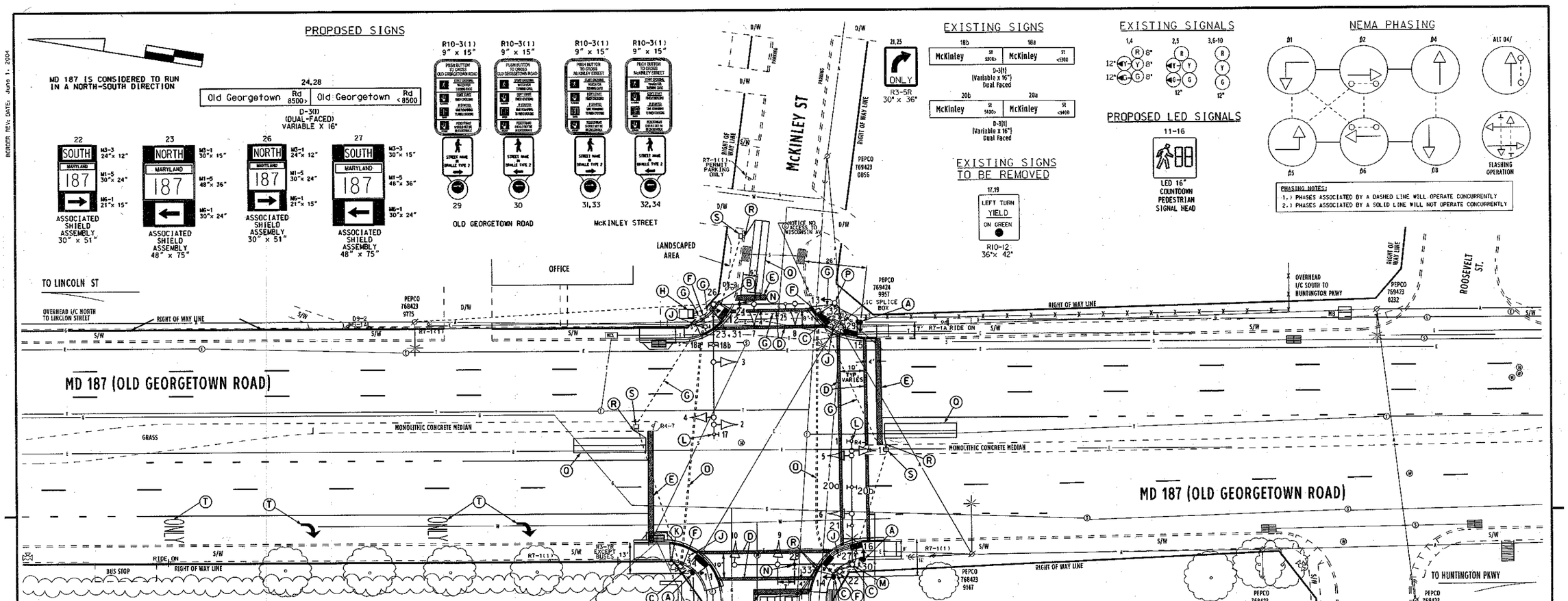
PLOTTED: Monday, December 22, 2008 AT 10:36 AM
FILE: P:\03-08F (MD 187 Book Job)\Drawings\pHT-D001_ MD187.dgn

DRILL HOLES

DRILL HOLES

DRILL HOLES

BORDER REV: DATE: June 1, 2004



CONSTRUCTION DETAILS

A. Install 10' breakaway pedestal pole with countdown pedestrian signal head and APS pushbutton with pedestrian education sign (R10-3(1). (Note: 1-3" 90° polyvinyl chloride (Schedule 80) bend.)

B. Remove existing pedestrian signal heads along with pushbutton and install countdown pedestrian signal head and APS pushbutton with pedestrian education sign (R10-3(1). and associated shield assembly signs on existing mast arm pole as shown.

C. Install 3" polyvinyl chloride electrical conduit (Schedule 80) (trenched).

D. Install 12" white heat applied preformed theromplastic pavement marking.(Crosswalk) (Note: The resurfacing project will remove all existing crosswalks.)

E. Install 24" white heat applied preformed theromplastic pavement marking.(Stopline) (Note: The resurfacing project will remove all existing stopline.)

F. Use existing handhole.

G. Use existing conduit.

H. Use existing cabinet and controller.

J. All existing handicap ramps are being done by the roadway contractor.

K. Remove existing pedestal pole and any other pedestrian associated equipment as shown. (Note: Contractor shall cap and abandon all existing conduit runs associated with this pole: and backfill 12" below grade.)

L. Remove existing overhead R10-12 sign.

M. Remove existing pedestrian signal heads from mast arm pole along with all associated pedestrian equipment and install associated shield assembly signs as shown.

N. Install overhead sign as shown.

O. Install 4" polyvinyl chloride electrical conduit (Schedule 80) (slotted).

P. Remove existing pedestrian signal heads along with pushbutton and install countdown pedestrian signal head and APS pushbutton with pedestrian education sign (R10-3(1) on existing pedestal pole as shown.

Q. Install 6' x 30' loop detector encased in 1/4" flexible tubing quadrupole type (3-6-3). (Note: All loops are to be placed 1' behind stopline.)

R. Install 1" liquid tight flexible non-metalic electrical conduit (detector wire sleeve).

S. Contractor shall splice proposed loop wire to existing 2 conductor Aluminum Shielded wire in existing handhole.

T. Pavement markings shall be replaced by the roadway contractor.

GENERAL NOTES:

1. All underground utilities shown on these plans are schematic only and may not be complete. The contractor shall be responsible for notifying "MISS UTILITY" prior to construction so that all utilities may be located in the field. If the contractor perceives that a conflict between the utilities and the traffic signal will occur. the contractor shall notify the project engineer immediately so that the conflict may be resolved.

2. All Traffic Signal Foundations shall be installed at the Final Sidewalk or Curb grade for closed sections. Highest Roadway Profile Grade for open sections. to meet clearances as specified in MD 816.03. MD 818.01. MD 818.02. and MD 818.04 The contractor shall verify ultimate grades prior to the installation of all signal equipment.

3. All pavement markings detailed are proposed and are to be installed in accordance with SHA standards. All crosswalks shall be centered on handicap ramps or median cut throughs.

4. Pushbuttons are to be located so that they can be activated by a person in a wheelchair reaching less than 18" from a 60"x 60" level landing area with a cross slope of less than or equal to 2%.

5. The 10' separation between pushbuttons is to be measured from face of pushbutton to face of pushbutton. not center to center of pole.

6. Pushbutton arrows are to be parallel to the crossing for which they are intended.

7. Location of Accessible Pedestrian signal pushbuttons must meet location requirements Of MUTCD Sec. 4E.09 and Fig. 4E.2 and the NCHRP publication. Accessible Pedestrian signals: Guide to Best Practice. If not met. the Contractor is to stop work on pushbutton locations until a design Waiver is obtained. approved by the Director. Office of Traffic and Safety.

8. The contractor shall remove all unused wiring.

GEOMETRIC LEGEND	
PROPOSED	
EXISTING	

LEGEND OF UNDERGROUND AND OVERHEAD UTILITIES	
AERIAL CABLE	A A
ELECTRIC	E E
TELEPHONE	T T
GAS	G G
SEWER	S S
WATER	W W
CABLE TV	TV TV

REVISION "B"

STREET TRAFFIC STUDIES, LTD.
400 Crain Hwy.NW.
Glen Burnie,MD 21061
Ph (410) 590-5500
Fax (410) 590-0637

5649.dgn T-210

APPROVALS	
TEAM LEADER	ORIGINAL ON FILE
ASST. DIV. CHIEF	
DIVISION CHIEF	
OFFICE DIRECTOR	

REVISIONS	
B	INSTALL APS AND CPS ACROSS 12-22-08 SB. EB. & WB LEGS SHA NO.:MO4295108 JWA
A	11/07 ASBUILT SHA NO.: RRZ

PLOTTED: #DATETIME#
FILE: #FILE#

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

MD 187 (OLD GEORGETOWN ROAD) AND McKINLEY STREET

BETHESDA, MARYLAND

TRAFFIC SIGNAL PLAN

SCALE 1"= 20'	DATE 9-11-91	CONTRACT NO.	
DESIGNED BY R R ZACHERI		COUNTY MONTGOMERY	
DRAWN BY W J NIES		LOCAIILE 150187001.18	
CHECKED BY		TIMS NO. J511	
F.A.P. NO.		TOD NO.	
TS NO. 3186B	DRAWING NO. 1 OF 2	SHEET NO. OF	

DRILL HOLES

DRILL HOLES

DRILL HOLES

BORDER REVI DATE: June 1, 2004

PROJECT DESCRIPTION

I. GENERAL

This project involves the modifcation of an existing Traffic Control Signal with interconnect at the intersection of MD 187 (Old Georgetown Rd) and McKinley Street in Montgomery County. The existing pedestrian signal heads shall be replaced with Countdown pedestrian signals. MD 187 (Old Georgetown Rd) is assumed to run a north-south direction.

II. INTERSECTION OPERATION

1. The intersection is to operate in a NEMA six-phase, semi-actuated mode, with the MD 187 (Old Georgetown Rd) approaches running concurrently. The Exclusive/Permissive left turn phase for the northbound and southbound approaches of MD 187 (Old Georgetown Rd) will continue to operate as normal. A Countdown pedestrian phase with audible pushbutton actuation shall be provided across the south leg of MD 187 (Old Georgetown Rd). The Countdown pedestrian phase with audible pushbuttons across McKinley Street shall be on recall. The McKinley Street approaches shall continue to operate concurrently.

2. An existing eight-phase controller, shall be used to house the proposed 2-wire Control Unit and all necessary equipment housed in a NEMA size "6" base-mounted cabinet shall be utilized at this intersection.

3. Montgomery County signal shop shall install APS control unit into controller cabinet. The Contractor shall deliver the Control Unit and audible pushbuttons to the Montgomery County Signal Shop for testing and programming.

III. SPECIAL NOTES

1. The Contractor shall be responsible for terminating all signal cables, excluding interconnect, to the appropriate terminals and shall properly label each cable.

2. All controller cabinet wiring will be performed by the Montgomery County Signal Shop. Contact Mr. Kamal Hamud at (240) 777-8761 seventy-two hours in advance of intended work.

3. All underground and overhead utilities shown on these plans are schematic only and may not be complete. The Contractor shall be responsible for notifying Miss Utility prior to construction so that all utilities may be located in the field. If the Contractor perceives that a conflict between the utilities and the traffic signal will occur, the Contractor shall notify the Project Engineer immediately so that the conflict may be resolved.

4. APS will function as follows:

FOR MD 187 (OLD GEORGETOWN RD)

a When pedestrian locates and presses pushbutton for an extended time, the pushbutton unit will be " Wait to cross Old Georgetown at McKinley"

b. When WALK phase begins, the message will be a rapid tick which will last for the duration of the WALK phase.

FOR McKINLEY STREET

a When pedestrian locates and presses pushbutton for an extended time, the pushbutton unit will be " Wait to cross McKinley at Old Georgetown"

b. When WALK phase begins, the message will be a rapid tick which will last for the duration of the WALK phase.

The contact persons for District #3 (Montgomery County) are as follows:

Mr. Jeff Wentz
Assistant District Engineer - Traffic
Phone: (301) 513-7358

Mr. Wayne Mowdy
Assistant District Engineer - Maintenance
Phone: (301) 513-7304

Mr. Augie Rebish
District Engineer - Utility
Phone: (301) 513-7350

Mr. Richard L. Daff, Sr.
Chief, Traffic Operations Division
Phone: (410) 787-7630

Mr. Keith Lord
Chief, Montgomery County Signal Shop
301-279-1291

Mr. Sonny Bailey
Chief, Sign Shop
410-787-7676

The power company representative is:

Mr. Steve Custer
PEPCO Customer Design
201 W Gude Dr.
Rockville, MD 20850
Phone: 301 548-4333

EQUIPMENT LIST

A. EQUIPMENT TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR

CAT NO.	DESCRIPTION	QUANTITY
973023	SHEET ALUMINIUM SIGNS	93 SF
	D3-2 "Old Georgetown Rd 8500)/ Old Georgetown Rd <8500" sign. (dual faced) (variable x 16").	2 EA
	Pedestrian education R10-3(1) mod sign. (Note: Sign to read "PUSHBUTTON TO CROSS OLD GEORETOWN ROAD").	2 EA
	Pedestrian education R10-3(1) mod sign. (Note: Sign to read "PUSHBUTTON TO CROSS McKinley Street").	4 EA

EQUIPMENT LIST (CONT.)

A. EQUIPMENT TO BE SUPPLIED BY S.H.A..

CAT NO.	DESCRIPTION	QUANTITY
	GUIDE SHIELD ASSEMBLY (48"x75") pole mounted. M3-3 "SOUTH"(30"X15") M1-5 "MD 187"(48"X36") M6-1 "left arrow "(30"X24")	1 EA
	GUIDE SHIELD ASSEMBLY (30"x51") pole mounted. M3-1 "NORTH"(24"X12") M1-5 "MD 187"(30"X24") M6-1 "right arrow "(21"X15")	1 EA
	GUIDE SHIELD ASSEMBLY (48"x75") pole mounted. M3-1 "NORTH"(30"X15") M1-5 "MD 187"(48"X36") M6-1 "left arrow "(30"X24")	1 EA
	GUIDE SHIELD ASSEMBLY (30"x51") pole mounted. M3-3 "SOUTH"(24"X12") M1-5 "MD 187"(30"X24") M6-1 "right arrow "(21"X15")	1 EA

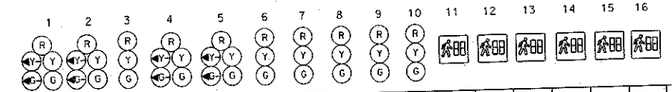
B. EQUIPMENT TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR

CAT NO.	DESCRIPTION	QUANTITY
203030	TEST PIT EXCAVATION	3 CY
585621	12 INCH WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINES	400 SF
585625	24 INCH WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINES	200 SF
800000A	16" COUNTDOWN PEDESTRIAN SIGNAL HEAD	6 EA
800000A	2 WIRE CONTROL UNIT	1 EA
800000A	AUDIBLE TACTILE PEDESTRIAN PUSHBUTTON STATION AND SIGNS	6 EA
801004	CONCRETE FOR SIGNAL FOUNDATION	4 CY
802501	NO. 6 AWG STRANDED BARE COPPER GROUND WIRE	275 LF
805135	3 INCH SCHEDULE 80 RIGID PVC CONDUIT-TRENCHED	120 LF
805155	4 INCH SCHEDULE 80 RIGID PVC CONDUIT-SLOTTED	270 LF
813014	INSTALL GROUND MOUNTED SIGN	6 SF
813015	INSTALL OVERHEAD SIGN	87 SF
818004	10 FOOT BREAKAWAY PEDESTAL POLE	4 EA
805160	1 INCH DIAMETER FLEXIBLE NON-METALIC CONDUIT	100 LF
837001	GROUND ROD - 3/4 INCH DIAMETER X 10 FOOT LENGTH	4 EA
861105	ELECTRICAL CABLE - 2 CONDUCTOR (NO. 14 AWG)	725 LF
861107	ELECTRICAL CABLE - 5 CONDUCTOR (NO. 14 AWG)	725 LF
862101	LOOP WIRE ENCASED IN FLEXIBLE TUBING (NO. 14 AWG)	2125 LF
800000	REMOVE AND DISPOSE EXISTING EQUIPMENT	1 EA

C. EQUIPMENT TO BE REMOVED

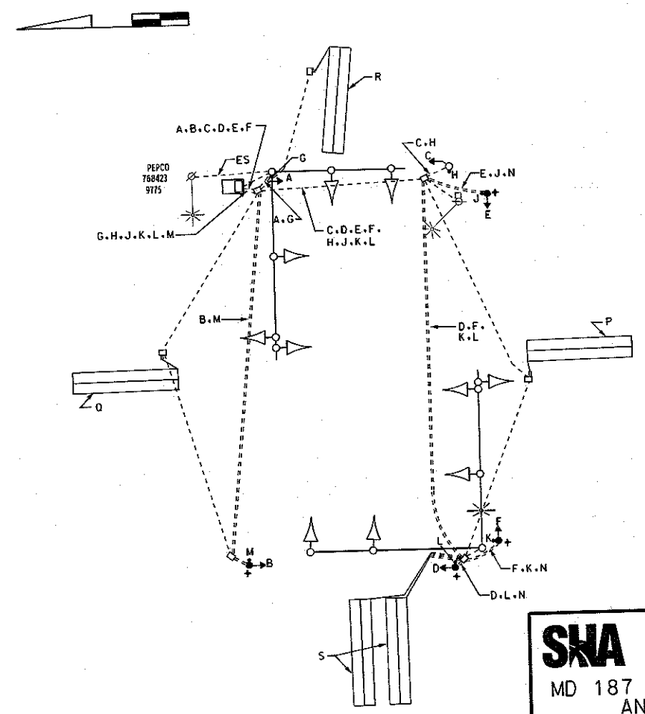
All removed signal materials are to become property of the contractor.

PHASE CHART



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE 1 & 5	◄G-/R	◄G-/R	R	◄G-/R	◄G-/R	R	R	R	R	R	DW	DW	DW	DW	DW	DW
CHANGES TO PHASES	1 & 6,	2 & 5	OR 2 & 6													
PHASE 1 & 6	◄G-/G	◄G-/G	G	R	R	R	R	R	R	R	DW	WK	WK	DW	DW	DW
1 CHANGE	◄Y-/G	◄Y-/G	G	R	R	R	R	R	R	R	DW	WK	WK	DW	DW	DW
PHASE 2 & 5	R	R	R	◄G-/G	◄G-/G	G	R	R	R	R	WK	DW	DW	WK	DW	DW
5 CHANGE	R	R	R	◄Y-/G	◄Y-/G	G	R	R	R	R	WK	DW	DW	WK	DW	DW
PHASE 2 & 6	G	G	G	G	G	G	R	R	R	R	WK	WK	WK	WK	DW	DW
PED CLEAR / COUNTDOWN	G	G	G	G	G	G	R	R	R	R	FL/DW	FL/DW	FL/DW	FL/DW	DW	DW
2 & 6 CHANGE	Y	Y	Y	Y	Y	Y	R	R	R	R	DW	DW	DW	DW	DW	DW
PHASE 4 & 8	R	R	R	R	R	R	G	G	G	G	DW	DW	DW	DW	DW	DW
4 & 8 CHANGE	R	R	R	R	R	R	Y	Y	Y	Y	DW	DW	DW	DW	DW	DW
PHASE 4 ALT	R	R	R	R	R	R	G	G	R	R	DW	DW	DW	DW	WK	WK
PED CLEAR / COUNTDOWN	R	R	R	R	R	R	G	G	R	R	DW	DW	DW	DW	FL/DW	FL/DW
4 ALT CHANGE	R	R	R	R	R	R	Y	Y	R	R	DW	DW	DW	DW	DW	DW
FLASHING OPERATION	FL/Y	FL/Y	FL/Y	FL/Y	FL/Y	FL/Y	FL/R	FL/R	FL/R	FL/R	DARK	DARK	DARK	DARK	DARK	DARK

WIRING DIAGRAM



WIRING KEY

- TPDX-RDA — 5-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G)
- C, F, K, L, M — 2-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G)
- N - STRANDED BARE COPPER GROUND WIRE (NO. 6 A.W.G.)
- O OR P — SPLICE TO EXISTING 2-CONDUCTOR ALUMINUM SHIELDED CABLE
- ES - EXISTING POWER SERVICE
- + - GROUND ROD

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

SHA

MD 187 (OLD GEORGETOWN ROAD) AND McKINLEY STREET

BETHESDA, MARYLAND

GENERAL INFORMATION SHEET

SCALE NONE DATE 12/22/08 CONTRACT NO. MD429516B

DESIGNED BY James Allen Jr.
DRAWN BY James Allen Jr.
CHECKED BY
F.A.P. NO.

COUNTY MONTGOMERY
LOGMILE 150187001.18
TMS NO. J511
TOD NO.

TS NO. 4316D | DRAWING NO. 2 OF 2 | SHEET NO. OF

STREET TRAFFIC STUDIES, LTD.
400 Drafts Hwy.-Rte.
Glen Burnie, MD 21061
Ph (410) 590-5500
Fax (410) 590-6637

5649G1.dgn T-211

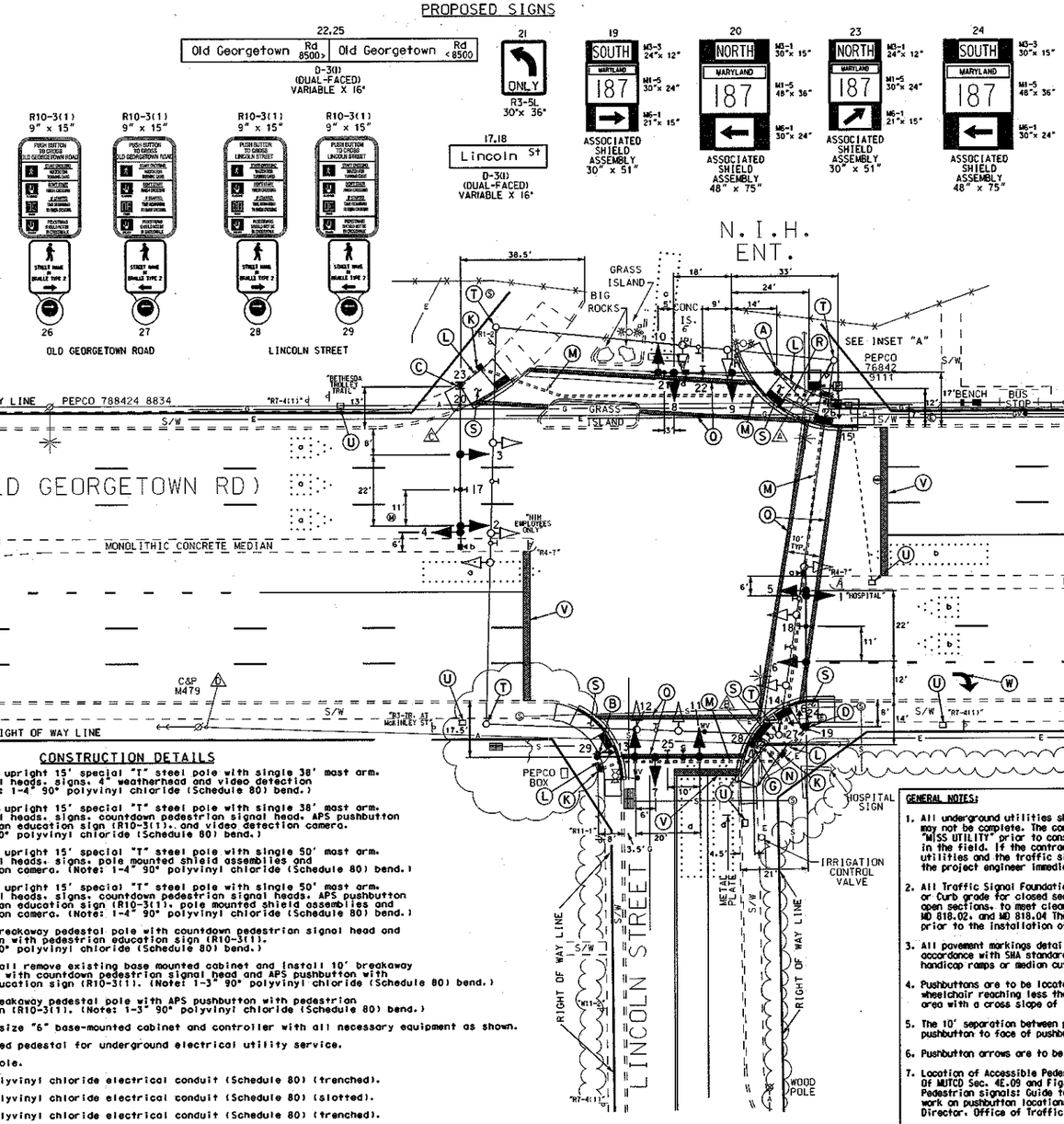
PLOTTED: $DATETIME$
FILE: $FILE$

DRILL HOLES

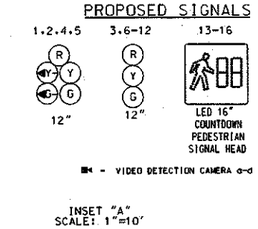
BORDER REV. DATE: June 1, 2004

NOTE: MD 187 IS CONSIDERED TO RUN IN A NORTH-SOUTH DIRECTION.

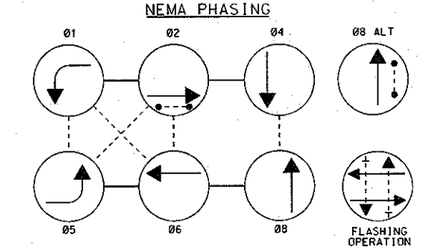
PROPOSED SIGNS



PROPOSED SIGNALS



NEMA PHASING



PHASING NOTES:
1.) PHASES ASSOCIATED BY A DASHED LINE WILL OPERATE CONCURRENTLY
2.) PHASES ASSOCIATED BY A SOLID LINE WILL NOT OPERATE CONCURRENTLY

CONSTRUCTION DETAILS

A. Install 16.5' upright 15' special "T" steel pole with single 38' mast arm. traffic signal heads. signs. 4" weatherhead and video detection camera. (Note: 1-4" 90° polyvinyl chloride (Schedule 80) bend.)

B. Install 16.5' upright 15' special "T" steel pole with single 38' mast arm. traffic signal heads. signs. countdown pedestrian signal head. APS pushbutton with pedestrian education sign (R10-3(1)). and video detection camera. (Note: 1-4" 90° polyvinyl chloride (Schedule 80) bend.)

C. Install 16.5' upright 15' special "T" steel pole with single 50' mast arm. traffic signal heads. signs. pole mounted shield assemblies and video detection camera. (Note: 1-4" 90° polyvinyl chloride (Schedule 80) bend.)

D. Install 16.5' upright 15' special "T" steel pole with single 50' mast arm. traffic signal heads. signs. countdown pedestrian signal heads. APS pushbutton with pedestrian education sign (R10-3(1)). pole mounted shield assemblies and video detection camera. (Note: 1-4" 90° polyvinyl chloride (Schedule 80) bend.)

E. Install 10' breakaway pedestal pole with countdown pedestrian signal head and APS pushbutton with pedestrian education sign (R10-3(1)). (Note: 1-3" 90° polyvinyl chloride (Schedule 80) bend.)

F. Contractor shall remove existing base mounted cabinet and install 10' breakaway pedestal pole with countdown pedestrian signal head and APS pushbutton with pedestrian education sign (R10-3(1)). (Note: 1-3" 90° polyvinyl chloride (Schedule 80) bend.)

G. Install 5' breakaway pedestal pole with APS pushbutton with pedestrian education sign (R10-3(1)). (Note: 1-3" 90° polyvinyl chloride (Schedule 80) bend.)

H. Install NEMA size "6" base-mounted cabinet and controller with all necessary equipment as shown.

J. Install metered pedestal for underground electrical utility service.

K. Install handhole.

L. Install 4" polyvinyl chloride electrical conduit (Schedule 80) (trenched).

M. Install 4" polyvinyl chloride electrical conduit (Schedule 80) (slotted).

N. Install 3" polyvinyl chloride electrical conduit (Schedule 80) (trenched).

O. Install 2" polyvinyl chloride electrical conduit (Schedule 80) (trenched).

P. Install 4" polyvinyl chloride electrical conduit (Schedule 80) (trenched) with 50' of 3 wire 1 conductor (No. 250 KCMIL) for proposed underground electrical power service by PEPCO to base of utility pole.

Q. Install 12" white heat applied preformed theromplastic pavement marking.(Crosswalk) (Note: The resurfacing project will remove all existing crosswalks.)

R. Contractor shall install 12 pair interconnect cable into existing weatherhead attached to Pepco pole 76842-9111 going into splice cabinet from proposed mast arm. (Note: See wiring diagram for more details.)

S. All existing handicap ramps are being done by the roadway contractor.

T. Remove existing strain pole and all associated signal equipment as shown. (Note: Contractor shall backfill 12" below grade.)

U. Abandon existing handhole and all existing conduit runs associated.

V. Install 24" white heat applied preformed theromplastic pavement marking.(Stopline) (Note: The resurfacing project will remove all existing stoplines.)

W. Pavement markings shall be replaced by the roadway contractor.

GENERAL NOTES:

1. All underground utilities shown on these plans are schematic only and may not be complete. The contractor shall be responsible for notifying "MISS UTILITY" prior to construction so that all utilities may be located in the field. If the contractor perceives that a conflict between the utilities and the traffic signal will occur. the contractor shall notify the project engineer immediately so that the conflict may be resolved.
2. All Traffic Signal Foundations shall be installed at the Final Sidewalk or Curb grade for closed sections. Highest Roadway Profile Grade for open sections. to meet clearances as specified in MD 816.03. MD 818.01. MD 818.02. and MD 818.04 The contractor shall verify ultimate grades prior to the installation of all signal equipment.
3. All pavement markings detailed are proposed and are to be installed in accordance with SHA standards. All crosswalks shall be centered on handicap ramps or median cut throughs.
4. Pushbuttons are to be located so that they can be activated by a person in a wheelchair reaching less than 18" from a 60"x 60" level landing area with a cross slope of less than or equal to 2%.
5. The 10' separation between pushbuttons is to be measured from face of pushbutton to face of pushbutton. not center to center of pole.
6. Pushbutton arrows are to be parallel to the crossing for which they are intended.
7. Location of Accessible Pedestrian signal pushbuttons must meet location requirements Of MUTCD Sec. 4E.09 and Fig. 4E.2 and the NCHRP publication. Accessible Pedestrian signals: Guide to Best Practice. If not met. the Contractor is to stop work on pushbutton locations until a design Waiver is obtained. approved by the Director. Office of Traffic and Safety.
8. The contractor shall remove all unused wiring.

OVERHEAD HEIGHTS

A		B	
TELEPHONE	20'-2"	SECONDARY	20'-8"
I/C	23'-6"	SECONDARY	28'-0"
CATV	24'-3"		
COMM	25'-3"		
SECONDARY	30'-6"		

C		D	
TELEPHONE	18'-6"	SECONDARY	22'-2"
I/C	19'-6"	SECONDARY	31'-10"
CATV	20'-6"		
COMM	21'-6"		
COMM	22'-6"		
SECONDARY	27'-8"		

BETHESDA. MARYLAND

GEOMETRIC LEGEND
PROPOSED
EXISTING

LEGEND OF UNDERGROUND AND OVERHEAD UTILITIES
AERIAL CABLE — A —
ELECTRIC — E —
TELEPHONE — T —
GAS — G —
SEWER — S —
WATER — W —
CABLE TV — TV —

STREET TRAFFIC STUDIES. LTD.
400 Crain Highway
Glen Burnie, MD 21061
Ph (410) 590-5500
Fax (410) 590-6657
5648.dgn T-209

APPROVALS	REVISIONS
TEAM LEADER	
ASST. DIV. CHIEF	
DIVISION CHIEF	12/22/08 RECONSTRUCT SIGNAL SHA.NO. MD42951GB
OFFICE DIRECTOR	

ORIGINAL ON FILE

JWA

PLOTTED: MONDAY, JANUARY 05, 2009 AT 01:51 PM
FILE: J:\DATA\J511\LINCOLN PL.DGN

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

MD 187 (OLD GEORGETOWN RD) AND LINCOLN STREET

BETHESDA. MARYLAND

TRAFFIC SIGNAL PLAN

SCALE 1"= 20' DATE CONTRACT NO.

DESIGNED BY
DRAWN BY D.A.NIES
CHECKED BY
F.A.P. NO.

COUNTY MONTGOMERY
LOGMILE 15018701.29
TIMS NO. J511
TOD NO.

TS NO. 106964 DRAWING NO. 1 OF 2 SHEET NO. OF

DRILL HOLES

DRILL HOLES

DRILL HOLES

BORDER REVISED DATED JUNE 1, 2004

PROJECT DESCRIPTION

I. GENERAL

This project involves the reconstruction of an existing Traffic Control Signal with interconnect at the intersection of MD 187 (Old Georgetown Rd) and Lincoln Street in Montgomery County. The existing strain poles shall be replaced with mast arms and existing pedestrian signal heads shall be replaced with Countdown pedestrian signals. MD 187 (Old Georgetown Rd) is assumed to run a north-south direction.

II. INTERSECTION OPERATION

1. The intersection is to operate in a NEMA six-phase, semi-actuated mode, with the MD 187 (Old Georgetown Rd) approaches running concurrently. The Exclusive/Permissive left turn phase for the northbound and southbound approaches of MD 187 (Old Georgetown Rd) will continue to operate as normal. A Countdown pedestrian phase with audible pushbutton actuation shall be provided across the south leg of MD 187 (Old Georgetown Rd). The Countdown pedestrian phase with audible pushbuttons across Lincoln Street on recall. The Lincoln Street approach shall continue to operate concurrently.

2. A proposed eight-phase controller, shall be used to house the 2-wire Control Unit and all necessary equipment in a NEMA size "6" base-mounted cabinet at this intersection.

3. Montgomery County signal shop shall install APS control unit into controller cabinet. The Contractor shall deliver the Control Unit and audible pushbuttons to the Montgomery County Signal Shop for testing and programming.

III. SPECIAL NOTES

1. The Contractor shall be responsible for terminating all signal cables, excluding interconnect, to the appropriate terminals and shall properly label each cable.

2. All controller cabinet wiring will be performed by the Montgomery County Signal Shop. Contact Mr. Kamal Hamud at (240) 777-8761 seventy-two hours in advance of intended work.

3. All underground and overhead utilities shown on these plans are schematic only and may not be complete. The Contractor shall be responsible for notifying Miss Utility prior to construction so that all utilities may be located in the field. If the Contractor perceives that a conflict between the utilities and the traffic signal will occur, the Contractor shall notify the Project Engineer immediately so that the conflict may be resolved.

4. APS will function as follows:

FOR MD 187 (OLD GEORGETOWN RD)

a When pedestrian locates and presses pushbutton for an extended time, the pushbutton unit will be " Wait to cross Old Georgetown at Lincoln"

b. When WALK phase begins, the message will be a rapid tick which will last for the duration of the WALK phase.

FOR LINCOLN STREET

a When pedestrian locates and presses pushbutton for an extended time, the pushbutton unit will be " Wait to cross Lincoln at Old Georgetown"

b. When WALK phase begins, the message will be a rapid tick which will last for the duration of the WALK phase.

The contact persons for District #3 (Montgomery County) are as follows:

Mr. Jeff Wentz
Assistant District Engineer - Traffic
Phone: (301) 513-7358

Mr. Wayne Mowdy
Assistant District Engineer - Maintenance
Phone: (301) 513-7304

Mr. Augie Rebish
District Engineer - Utility
Phone: (301) 513-7350

Mr. Richard L. Daff, Sr.
Chief, Traffic Operations Division
Phone: (410) 787-7630

Mr. Keith Lord
Chief, Montgomery County Signal Shop
301-279-1291

Mr. Sonny Bailey
Chief, Sign Shop
410-787-7676

The power company representative is:

Mr. Steve Custer
PEPCO Customer Design
201 W Gude Dr.
Rockville, MD 20850
Phone: 301 548-4333

EQUIPMENT LIST

A. EQUIPMENT TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR

CAT NO.	DESCRIPTION	QUANTITY
900000	VIDEO INTERFACE EQUIPMENT	1 EA
971017	EIGHT PHASE (FULLY ACTUATED) CONTROLLER AND CABINET - BASE MOUNT	1 EA
973023	SHEET ALUMINIUM SIGNS	114 SF
	D-3(1) "Old Georgetown Rd 8500>/ Old Georgetown Rd <8500" sign. (dual faced) (variable x 16").	2 EA
	D-3(1) "Lincoln Street" sign. (Dual Face) (variable x 16").	2 EA
	Pedestrian education R10-3(1) mod sign. (Note: Sign to read "PUSHBUTTON TO CROSS OLD GEORETOWN ROAD").	2 EA
	Pedestrian education R10-3(1) mod sign. (Note: Sign to read "PUSHBUTTON TO CROSS Lincoln Street").	2 EA
	R3-5L "LEFT TURN ONLY" sign. (30" x 36")	1 EA

EQUIPMENT LIST (CONT.)

A. EQUIPMENT TO BE SUPPLIED BY S.H.A..

CAT NO.	DESCRIPTION	QUANTITY
	GUIDE SHIELD ASSEMBLY (48"x75") pole mounted. M3-3 "SOUTH"(30"X15") M1-5 "MD 187"(48"X36") M6-1 "left arrow "(30"X24")	1 EA
	GUIDE SHIELD ASSEMBLY (30"x51") pole mounted. M3-1 "NORTH"(24"X12") M1-5 "MD 187"(30"X24") M6-1 "45" arrow "(21"X15")	1 EA
	GUIDE SHIELD ASSEMBLY (48"x75") pole mounted. M3-1 "NORTH"(30"X15") M1-5 "MD 187"(48"X36") M6-1 "left arrow "(30"X24")	1 EA
	GUIDE SHIELD ASSEMBLY (30"x51") pole mounted. M3-3 "SOUTH"(24"X12") M1-5 "MD 187"(30"X24") M6-1 "right arrow "(21"X15")	1 EA

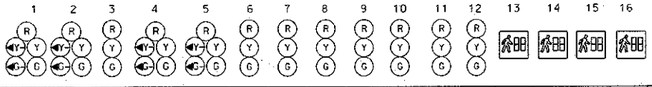
B. EQUIPMENT TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR

CAT NO.	DESCRIPTION	QUANTITY
203030	TEST PIT EXCAVATION	9 CY
585621	12 INCH WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINES	500 LF
585625	24 INCH WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINES	150 LF
800000A	4" WEATHERHEAD	1 EA
800000A	16" COUNTDOWN PEDESTRIAN SIGNAL HEAD	6 EA
800000A	2 WIRE CONTROL UNIT	1 EA
800000A	AUDIBLE TACTILE PEDESTRIAN PUSHBUTTON STATION AND SIGNS	6 EA
800000A	1 CONDUCTOR (No. 250 KCMIL) ELECTRICAL CABLE	300 LF
800000	REMOVE AND DISPOSE EXISTING EQUIPMENT	1 EA
801004	CONCRETE FOR SIGNAL FOUNDATION	17 CY
802501	NO. 6 AWG STRANDED BARE COPPER GROUND WIRE	630 LF
805155	4 INCH SCHEDULE 80 RIGID PVC CONDUIT-SLOTTED	400 LF
805125	2 INCH SCHEDULE 80 RIGID PVC CONDUIT-TRENCHED	150 LF
805135	3 INCH SCHEDULE 80 RIGID PVC CONDUIT-TRENCHED	275 LF
805140	4 INCH SCHEDULE 80 RIGID PVC CONDUIT-TRENCHED	200 LF
807202	METERED SERVICE PEDESTAL	1 EA
810010	ELECTRICAL CABLE - 1 CONDUCTOR (NO. 4 AWG-THHN/THWN)	70 LF
811001	FURNISH AND INSTALL ELECTRICAL HANDHOLE	4 EA
813014	INSTALL GROUND MOUNTED SIGN	4 SF
813015	INSTALL OVERHEAD SIGN	110 SF
816001	VIDEO DETECTION CAMERA	4 EA
816010	CONTROL CABLE, 500 FOOT, VIDEO DETECTION CAMERA TO CONTROLLER	4 EA
816015	VIDEO INTERFACE EQUIPMENT	1 EA
818004	10 FOOT BREAKAWAY PEDESTAL POLE	3 EA
818030	STEEL POLE WITH A SINGLE 38 FOOT MAST ARM	2 EA
818036	STEEL POLE WITH A SINGLE 50 FT MAST ARM	2 EA
822002	12-PAIR COMMUNICATION CABLE, JELLYFILLED (UNDERGROUND)	150 LF
837001	GROUND ROD - 3/4 INCH DIAMETER X 10 FOOT LENGTH	10 EA
860284	12 INCH LED VEHICULAR TRAFFIC SIGNAL HEAD SECTION	44 EA
860292	CUT, CLEAN, GALVANIZE AND CAP TRAFFIC SIGNAL STRUCTURE	1 EA
861105	ELECTRICAL CABLE - 2 CONDUCTOR (NO. 14 AWG)	725 LF
861107	ELECTRICAL CABLE - 5 CONDUCTOR (NO. 14 AWG)	875 LF
861108	ELECTRICAL CABLE - 7 CONDUCTOR (NO. 14 AWG)	1400 LF
871202	INSTALL CONTROLLER CABINET - BASE MOUNT	1 EA

C. EQUIPMENT TO BE REMOVED

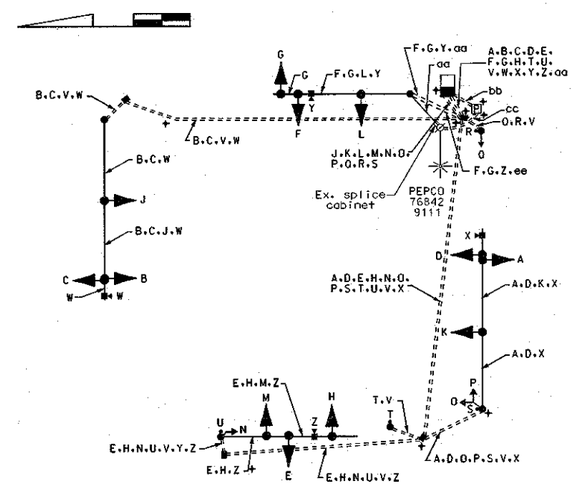
Montgomery County Forces shall remove the controller and all auxilliary equipment from the controller cabinet. The cabinet and all other removed signal materials are to become property of the contractor.

PHASE CHART



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE 1 & 5	◄G-/R	◄G-/R	R	◄G-/R	◄G-/R	R	R	R	R	R	R	R	DW	DW	DW	DW
CHANGES TO PHASES	1 & 6, 2 & 5 OR 2 & 6															
PHASE 1 & 6	◄G-/G	◄G-/G	G	R	R	R	R	R	R	R	R	R	DW	DW	DW	DW
1 CHANGE	◄Y-/G	◄Y-/G	G	R	R	R	R	R	R	R	R	R	DW	DW	DW	DW
PHASE 2 & 5	R	R	R	◄G-/G	◄G-/G	G	R	R	R	R	R	R	WK	WK	DW	DW
5 CHANGE	R	R	R	◄Y-/G	◄Y-/G	G	R	R	R	R	R	R	WK	WK	DW	DW
PHASE 2 & 6	G	G	G	G	G	G	R	R	R	R	R	R	WK	WK	DW	DW
PED CLEAR / COUNTDOWN	G	G	G	G	G	G	R	R	R	R	R	R	FL/DW	FL/DW	DW	DW
2 & 6 CHANGE	Y	Y	Y	Y	Y	Y	R	R	R	R	R	R	DW	DW	DW	DW
PHASE 4 & 8	R	R	R	R	R	R	G	G	G	G	G	G	DW	DW	DW	DW
4 & 8 CHANGE	R	R	R	R	R	R	Y	Y	Y	Y	Y	Y	DW	DW	DW	DW
PHASE 8 ALT	R	R	R	R	R	R	G	G	R	R	R	R	DW	DW	WK	WK
PED CLEAR / COUNTDOWN	R	R	R	R	R	R	G	G	R	R	R	R	DW	DW	FL/DW	FL/DW
8 ALT CHANGE	R	R	R	R	R	R	Y	Y	R	R	R	R	DW	DW	DW	DW
FLASHING OPERATION	FL/Y	FL/Y	FL/Y	FL/Y	FL/Y	FL/Y	FL/R	FL/R	FL/R	FL/R	FL/R	FL/R	DARK	DARK	DARK	DARK

WIRING DIAGRAM



WIRING KEY

A B C D E F G H } 7-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G)

J K L M N O P Q R } 5-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G)

R S T U } 2-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G)

V - STRANDED BARE COPPER GROUND WIRE (NO. 6 A.W.G.)

W X Y Z } CONTROL CABLE (CAMERA TO CONTROLLER) 500'

aa - PROPOSED 12 PAIR INTERCONNECT CABLE UNDERGROUND

bb - 3-1 CONDUCTOR ELECTRICAL CABLE (NO. 4 A.W.G.)

cc - 3-1 CONDUCTOR ELECTRICAL CABLE (NO. 250 KCMIL)

+ - GROUND ROD

SHA STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

MD 187 (OLD GEORGETOWN ROAD) AND LINCOLN STREET

BETHESDA, MARYLAND

GENERAL INFORMATION SHEET

SCALE NONE DATE 12/22/08 CONTRACT NO. M0429518A

DESIGNED BY James Allen Jr. COUNTY MONTGOMERY
DRAWN BY James Allen Jr. LOGMILE 15018701.29
CHECKED BY TIMS NO. J511
F.A.P. NO. TOD NO.

TS NO. 106%A | DRAWING NO. 2 OF 2 | SHEET NO. OF

STREET TRAFFIC STUDIES, LTD.
400 Crain Hwy. NW.
Glen Burnie, MD 21061
Ph (410) 590-5500
Fax (410) 590-6537
5648G1.dgn T-209

PLOTTED: MONDAY, JANUARY 05, 2009 AT 01:52 PM
FILE: J:\DATA\J511\LINCOLN 01.DGN

DRILL HOLES

BORDER REV. DATE: June 1, 2004

DRILL HOLES

DRILL HOLES

NOTE: MD 187 IS CONSIDERED TO RUN IN A NORTH-SOUTH DIRECTION.

PROPOSED SIGNS

R10-3(1) 9" x 15" — 26
R10-3(1) 9" x 15" — 27
R10-3(1) 9" x 15" — 28
R10-3(1) 9" x 15" — 29

OLD GEORGETOWN ROAD

HUNTINGTON PKWY

EXISTING SIGNS

17a.19b — Huntington PKWY <5300

17b.19a — Huntington PKWY 5300>

D3-(1) (DUAL-FACED) VARIABLE X 16"

18.21 — ONLY — R3-5L 30" x 36"

22 — R3-6 30" x 36"

23.26 — ONLY

20 — NORTH 187 SOUTH — M95-1 72" x 24"

25 — SOUTH 187 NORTH — M95-1 72" x 24"

EXISTING SIGNS TO BE REMOVED

24 — R3-6 30" x 36"

30 — LEFT TURN YIELD ON GREEN — R10-12 36" x 42"

PROPOSED LED SIGNALS

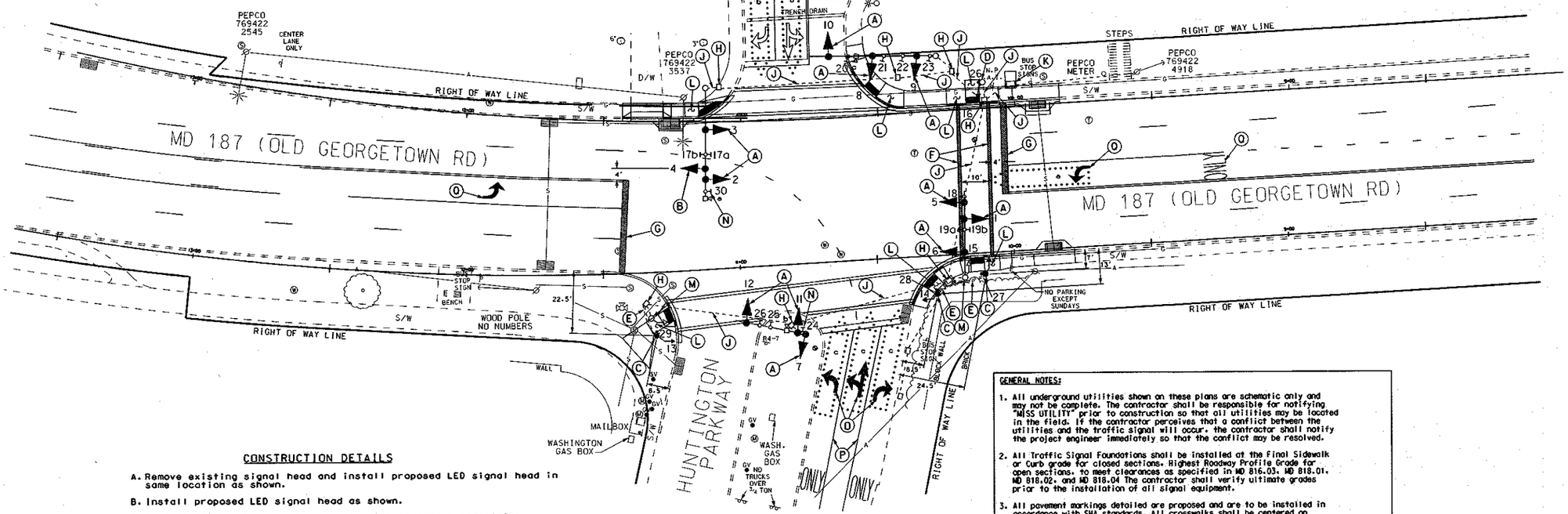
1.2 — 12"
3-6, 9.12 — 12"
7.8, 10.11 — 12"
13-16 — LED 16" COUNTDOWN PEDESTRIAN SIGNAL HEAD

⊡ - VIDEO DETECTION CAMERA, a-c

NEMA PHASING

02, 03, 04, 04 ALT, 05, 06, FLASHING OPERATION

PHASING NOTES:
1.) PHASES ASSOCIATED BY A DASHED LINE WILL OPERATE CONCURRENTLY
2.) PHASES ASSOCIATED BY A SOLID LINE WILL NOT OPERATE CONCURRENTLY



CONSTRUCTION DETAILS

A. Remove existing signal head and install proposed LED signal head in same location as shown.

B. Install proposed LED signal head as shown.

C. Install 10' breakaway pedestal pole with countdown pedestrian signal head and APS pushbutton with pedestrian education sign (R10-3(1). (Note: 1-3" 90° polyvinyl chloride (Schedule 80) bend.)

D. Remove existing pedestrian signal head along with pushbutton and install countdown pedestrian signal head and APS pushbutton with pedestrian education sign (R10-3(1) on existing pedestal pole as shown.

E. Install 3" polyvinyl chloride electrical conduit (Schedule 80) (trenched).

F. Install 12" white heat applied preformed theromplastic pavement marking.(Crosswalk) (Note: The resurfacing project will remove all existing crosswalks.)

G. Install 24" white heat applied preformed theromplastic pavement marking.(Stopline) (Note: The resurfacing project will remove all existing stoplines.)

H. Use existing handhole.

J. Use existing conduit.

K. Use existing cabinet and controller.

L. All existing handicap ramps are being done by the roadway contractor.

M. Remove existing pedestal pole and any other pedestrian associated equipment as shown. (Note: Contractor shall cap and abandon all existing conduit runs associated with this pole and backfill 12" below grade.)

N. Remove existing overhead sign.

O. Remove and replace existing Pavement Marking Arrows.

P. Remove and replace existing Laneline Pavement Marking.

Q. Pavement markings shall be replaced by the roadway contractor.

GEOMETRIC LEGEND
PROPOSED
EXISTING

LEGEND OF UNDERGROUND AND OVERHEAD UTILITIES
AERIAL CABLE — A — A —
ELECTRIC — E — E —
TELEPHONE — T — T —
GAS — G — G —
SEWER — S — S —
WATER — W — W —
CABLE TV — TV — TV —

GENERAL NOTES:

1. All underground utilities shown on these plans are schematic only and may not be complete. The contractor shall be responsible for notifying "MISS UTILITY" prior to construction so that all utilities may be located in the field. If the contractor perceives that a conflict between the utilities and the traffic signal will occur, the contractor shall notify the project engineer immediately so that the conflict may be resolved.
2. All Traffic Signal Foundations shall be installed at the Final Sidewalk or Curb grade for closed sections. Highest Roadway Profile Grade for open sections, to meet clearances as specified in MD 816.03, MD 818.01, MD 818.02, and MD 818.04 The contractor shall verify ultimate grades prior to the installation of all signal equipment.
3. All pavement markings detailed are proposed and are to be installed in accordance with SHA standards. All crosswalks shall be centered on handicap ramps or median cut throughs.
4. Pushbuttons are to be located so that they can be activated by a person in a wheelchair reaching less than 18" from a 60"x 60" level landing area with a cross slope of less than or equal to 2%.
5. The 10' separation between pushbuttons is to be measured from face of pushbutton to face of pushbutton, not center to center of pole.
6. Pushbutton arrows are to be parallel to the crossing for which they are intended.
7. Location of Accessible Pedestrian signal pushbuttons must meet location requirements of MUTCD Sec. 4E.09 and Fig. 4E.2 and the NCHRP publication, Accessible Pedestrian signals: Guide to Best Practice. If not met, the Contractor is to stop work on pushbutton locations until a design Waiver is obtained, approved by the Director, Office of Traffic and Safety.
8. The contractor shall remove all unused wiring.

REVISION "D"

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Ph (410) 590-5500
Fax (410) 590-5637

5650.dgn T-211

APPROVALS
TEAM LEADER
ASST. DIV. CHIEF
DIVISION CHIEF
OFFICE DIRECTOR
ORIGINAL ON FILE

REVISIONS
D INSTALL APS AND CPS AND LED SIGNAL HEADS SHA WO.W042951 12/22/08 JWA
C 11/2007 ASBUILT SHA NO. 1 JWA
B 11/2004 REPLACE LOOP DETECTION WITH VIDEO CAMERAS SHA NO.AW071585 JA

PLOTTED: $DATETIME$
FILE: $FILE$

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

MD 187 AND (OLD GEORGETOWN RD) HUNTINGTON PARKWAY

BETHESDA, MARYLAND

TRAFFIC SIGNAL PLAN

SCALE 1" = 20' DATE 3/5/73 CONTRACT NO. E-73-031

DESIGNED BY G.S.D. COUNTY MONTGOMERY
DRAWN BY HANI S. MALAS LOGMILE 15018700.91
CHECKED BY TIMS NO. J511
F.A.P. NO. TOD NO.

TS NO. 4316D | DRAWING NO. 1 OF 2 | SHEET NO. OF

DRILL HOLES

DRILL HOLES

DRILL HOLES

BORDER REV. DATE: June 1, 2004

PROJECT DESCRIPTION

I. GENERAL

This project involves the modification of an existing Traffic Control Signal with interconnect at the intersection of MD 187 (Old Georgetown Rd) and Huntington Pkwy in Montgomery County. The existing signal heads shall be replaced with LED signal heads and existing pedestrian signal heads with Countdown pedestrian signals. MD 187 (Old Georgetown Rd) is assumed to run a north-south direction.

II. INTERSECTION OPERATION

1. The intersection is to operate in a NEMA five-phase, semi-actuated mode, with the MD 187 (Old Georgetown Rd) approaches running concurrently. The Exclusive/Permissive left turn phase for the northbound approach of MD 187 (Old Georgetown Rd) will continue to operate as normal. A Countdown pedestrian phase with audible pushbutton actuation shall be provided across the south leg of MD 187 (Old Georgetown Rd). The Countdown pedestrian phase with audible pushbuttons across Huntington Pkwy shall be on recall. The Huntington Pkwy approaches shall continue to operate as a side street split phase.

2. A full-traffic-actuated, existing eight-phase controller with existing video interface, proposed 2-wire Control Unit and all necessary equipment housed in a NEMA size "6" base-mounted cabinet shall be utilized at this intersection.

3. Montgomery County signal shop shall install APS control unit into controller cabinet. The Contractor shall deliver the Control Unit and audible pushbuttons to the Montgomery County Signal Shop for testing and programming.

III. SPECIAL NOTES

1. The Contractor shall be responsible for terminating all signal cables, excluding interconnect, to the appropriate terminals and shall properly label each cable.

2. All controller cabinet wiring will be performed by the Montgomery County Signal Shop. Contact Mr. Kamal Hamud at (240) 777-8761 seventy-two hours in advance of intended work.

3. All underground and overhead utilities shown on these plans are schematic only and may not be complete. The Contractor shall be responsible for notifying Miss Utility prior to construction so that all utilities may be located in the field. If the Contractor perceives that a conflict between the utilities and the traffic signal will occur, the Contractor shall notify the Project Engineer immediately so that the conflict may be resolved.

4. APS will function as follows:

FOR MD 187 (OLD GEORGETOWN RD)

a. When pedestrian locates and presses pushbutton for an extended time, the pushbutton unit will be " Wait to cross Old Georgetown at Huntington"

b. When WALK phase begins, the message will be a rapid tick which will last for the duration of the WALK phase.

FOR HUNTINGTON PARKWAY

a. When pedestrian locates and presses pushbutton for an extended time, the pushbutton unit will be " Wait to cross Huntington at Old Georgetown (Crosswalk angles left.)"

b. When WALK phase begins, the message will be a rapid tick which will last for the duration of the WALK phase.

The contact persons for District #3 (Montgomery County) are as follows:

Mr. Jeff Wentz
Assistant District Engineer - Traffic
Phone: (301) 513-7358

Mr. Wayne Mowdy
Assistant District Engineer - Maintenance
Phone: (301) 513-7304

Mr. Augie Rebish
District Engineer - Utility
Phone: (301) 513-7350

Mr. Richard L. Daff, Sr.
Chief, Traffic Operations Division
Phone: (410) 787-7630

Mr. Keith Lord
Chief, Montgomery County Signal Shop
301-279-1291

Mr. Sonny Bailey
Chief, Sign Shop
410-787-7676

The power company representative is:

Mr. Steve Custer
PEPCO Customer Design
201 W Gude Dr.
Rockville, MD 20850
Phone: 301 548-4333

EQUIPMENT LIST

A. EQUIPMENT TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR

CAT NO.	DESCRIPTION	QUANTITY
973023	SHEET ALUMINIUM SIGNS	4 SF
	Pedestrian education R10-3(1) mod sign. (Note: Sign to read "PUSHBUTTON TO CROSS OLD GEORETOWN ROAD").	2 EA
	Pedestrian education R10-3(1) mod sign. (Note: Sign to read "PUSHBUTTON TO CROSS HUNTINGTON PKWY").	2 EA

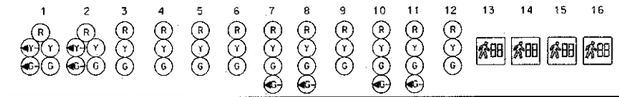
B. EQUIPMENT TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR

CAT NO.	DESCRIPTION	QUANTITY
203030	TEST PIT EXCAVATION	3 CY
585405	5 INCH WHITE LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKING	150 LF
585612	PERMANENT PREFORMED PATTERNED REFLECTIVE PAVEMENT MARKINGS ARROWS	3 EA
585621	12 INCH WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINES	150 SF
585625	24 INCH WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINES	100 SF
800000A	16" COUNTDOWN PEDESTRIAN SIGNAL HEAD	4 EA
800000A	2 WIRE CONTROL UNIT	1 EA
800000A	AUDIBLE TACTILE PEDESTRIAN PUSHBUTTON STATION AND SIGNS	4 EA
801004	CONCRETE FOR SIGNAL FOUNDATION	4 CY
802501	NO. 6 AWG STRANDED BARE COPPER GROUND WIRE	275 LF
805135	3 INCH SCHEDULE 80 RIGID PVC CONDUIT-TRENCHED	120 LF
813014	INSTALL GROUND MOUNTED SIGN	4 SF
818004	10 FOOT BREAKAWAY PEDESTAL POLE	3 EA
837001	GROUND ROD - 3/4 INCH DIAMETER X 10 FOOT LENGTH	3 EA
860284	12 INCH LED VEHICULAR TRAFFIC SIGNAL HEAD SECTION	44 EA
861105	ELECTRICAL CABLE - 2 CONDUCTOR (NO. 14 AWG)	635 LF
861107	ELECTRICAL CABLE - 5 CONDUCTOR (NO. 14 AWG)	650 LF
861108	ELECTRICAL CABLE - 7 CONDUCTOR (NO. 14 AWG)	275 LF
800000	REMOVE AND DISPOSE EXISTING EQUIPMENT	1 EA

C. EQUIPMENT TO BE REMOVED

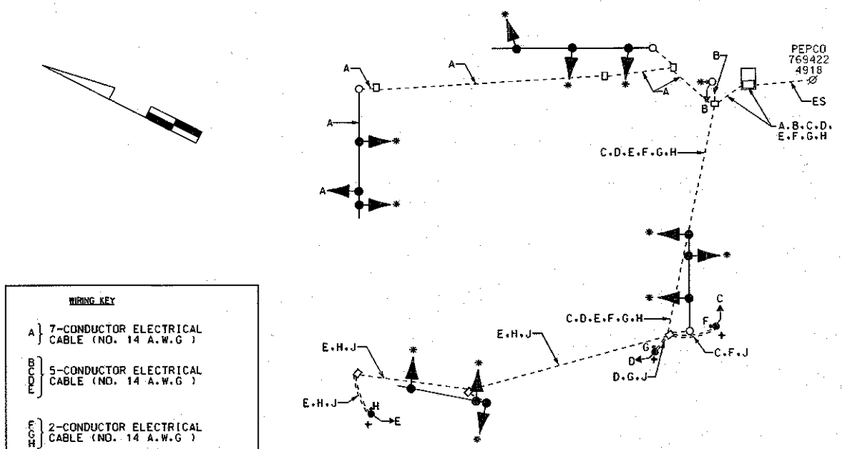
All removed signal materials are to become property of the contractor.

PHASE CHART



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PHASE 2 & 5	◄G-/G	◄G-/G	G	R	R	R	R	R	R	R	R	R	DW	DW	DW	DW
5 CHANGE	◄Y-/G	◄Y-/G	G	R	R	R	R	R	R	R	R	R	DW	DW	DW	DW
PHASE 2 & 6	G	G	G	G	G	G	R	R	R	R	R	R	WK	WK	DW	DW
PED CLEAR / COUNTDOWN	G	G	G	G	G	G	R	R	R	R	R	R	FL/DW	FL/DW	DW	DW
2 & 6 CHANGE	Y	Y	Y	Y	Y	Y	R	R	R	R	R	R	DW	DW	DW	DW
PHASE 3	R	R	R	R	R	R	R	R	R	G ◄G-	G ◄G-	G	DW	DW	DW	DW
3 CHANGE	R	R	R	R	R	R	R	R	R	Y	Y	Y	DW	DW	DW	DW
PHASE 4	R	R	R	R	R	R	G ◄G-	G ◄G-	G	R	R	R	DW	DW	DW	DW
4 CHANGE	R	R	R	R	R	R	Y	Y	Y	R	R	R	DW	DW	DW	DW
PHASE 4 ALT	R	R	R	R	R	R	G ◄G-	G ◄G-	G	R	R	R	DW	DW	WK	WK
PED CLEAR / COUNTDOWN	R	R	R	R	R	R	G ◄G-	G ◄G-	G	R	R	R	DW	DW	FL/DW	FL/DW
4 ALT CHANGE	R	R	R	R	R	R	Y	Y	Y	R	R	R	DW	DW	DW	DW
FLASHING OPERATION	FL/Y	FL/Y	FL/Y	FL/Y	FL/Y	FL/Y	FL/R	FL/R	FL/R	FL/R	FL/R	FL/R	DARK	DARK	DARK	DARK

WIRING DIAGRAM



WIRING KEY

A } 7-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G)

B, C, D, E } 5-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G)

F, G, H } 2-CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G)

J - STRANDED BARE COPPER GROUND WIRE (NO. 6 A.W.G.)

ES - EXISTING POWER SERVICE

* - USE EXISTING WIRING

+ - GROUND ROD

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

MD 187 AND (OLD GORGETOWN RD)
HUNTINGTON PARKWAY

BETHESDA, MARYLAND

GENERAL INFORMATION SHEET

SCALE NONE DATE 12/22/08 CONTRACT NO. MO4295169

DESIGNED BY James Allen Jr. COUNTY MONTGOMERY
DRAWN BY James Allen Jr. LOCMILE 15018700.91
CHECKED BY TIMS NO. J511
F.A.P. NO. TOD NO.

TS NO. 4316D | DRAWING NO. 2 OF 2 | SHEET NO. OF

STREET TRAFFIC STUDIES, LTD.
400 Crofts Hwy.#28,
Glen Burnie,MD 21061
Ph (401) 590-5500
Fax (401) 590-6637

565061.dgn T-211

PLOTTED: $DATETIME$
FILE: $FILE$

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
PROPOSAL FORM

Proposal by _____
Name

_____
Address (Street and/or P.O. Box)

_____
City State Zip

( ) ( ) _____
A.C. Phone No. A.C. Fax No.

to furnish and deliver all materials and to do and perform all work, in conformance with the Standard Specifications, revisions thereto, General Provisions and the Special Provisions in this contract to MD 187 located in, Montgomery County Maryland, for which Invitation for Bids will be received until 12:00 o'clock noon on Thursday, April 16, 2009, this work being situated as follows:

Safety and Resurfacing on MD 187; From 150' South of Center Drive to North Brook Lane

To the State Highway Administration
BID BOX
7450 Traffic Drive
Hanover, Maryland 21076

In response to the advertisement by the Administration, inviting bids for the work in conformance with the Contract Documents, now on file in the office of the Administration. I/We hereby certify that I/we am/are the only person, or persons, interested in this bid proposal as principals, and that an examination has been made of the work site, the Specifications, the Plans, and Invitation for Bids, including the Special Provisions contained herein. I/We propose to furnish all necessary machinery, equipment, tools, labor and other means of construction, and to furnish all materials required to complete the project at the following unit price or lump sum price.

ITEM NO. CCS NO.	APPROXIMATE QUANTITIES	DESCRIPTION OF ITEMS	SECTION	UNIT PRICE DOLLARS	UNIT PRICE CENTS	AMOUNTS DOLLARS	AMOUNTS CENTS
1001 110360	LUMP SUM	TYPE C ENGINEERS OFFICE	103	LUMP SUM			
1002 110500	15,000	EACH OF PRICE ADJUSTMENT FOR DIESEL FUEL	XXX SP	1	00	15,000	00
1003 114005	7,790	LINEAR FEET OF 5 INCH YELLOW NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT	104.11 SP				
1004 114010	18,300	LINEAR FEET OF 5 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT	104.11 SP				
1005 114035	1,400	LINEAR FEET OF 12 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT	104.11 SP				
1006 114045	403	LINEAR FEET OF 24 INCH WHITE NONTOXIC LEAD FREE WATERBORNE PAVEMENT MARKING PAINT	104.11 SP				

ITEM NO. CCS NO.	APPROXIMATE QUANTITIES	DESCRIPTION OF ITEMS	SECTION	UNIT PRICE DOLLARS	UNIT PRICE CENTS	AMOUNTS DOLLARS	AMOUNTS CENTS
1007 114215	9,000	LINEAR FEET OF 5 INCH YELLOW REMOVABLE PREFORMED PAVEMENT LINE MARKINGS	104.11 SP				
1008 114220	17,000	LINEAR FEET OF 5 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS	104.11 SP				
1009 114235	3,100	LINEAR FEET OF 12 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS	104.11 SP				
1010 114245	510	LINEAR FEET OF 24 INCH WHITE REMOVABLE PREFORMED PAVEMENT LINE MARKINGS	104.11 SP				
1011 114275	27,893	LINEAR FEET OF REMOVAL OF REMOVABLE PREFORMED PAVEMENT MARKINGS - ANY WIDTH	104.11 SP				
1012 120500	LUMP SUM	MAINTENANCE OF TRAFFIC	104	LUMP SUM			

ITEM NO. CCS NO.	APPROXIMATE QUANTITIES	DESCRIPTION OF ITEMS	SECTION	UNIT PRICE DOLLARS	UNIT PRICE CENTS	AMOUNTS DOLLARS	AMOUNTS CENTS
1013 120555	25	TONS OF GRADED AGGREGATE BASE FOR MAINTENANCE OF TRAFFIC	105				
1014 120561	50	TONS OF HOT MIX ASPHALT FOR MAINTENANCE OF TRAFFIC	106				
1015 120610	60	PER UNIT DAY ARROW PANEL	104.07				
1016 120625	300	SQUARE FEET OF TEMPORARY TRAFFIC SIGNS HIGH PERFORMANCE WIDE ANGLE RETROREFLECTIVE SHEETING	104.08				
1017 120784	40	LINEAR FEET OF TEMPORARY ORANGE CONSTRUCTION FENCE	104.2				
1018 120820	150	EACH OF DRUMS FOR MAINTENANCE OF TRAFFIC	104.12				

ITEM NO. CCS NO.	APPROXIMATE QUANTITIES	DESCRIPTION OF ITEMS	SECTION	UNIT PRICE DOLLARS	UNIT PRICE CENTS	AMOUNTS DOLLARS	AMOUNTS CENTS
1019 120860	60	PER UNIT DAY PORTABLE VARIABLE MESSAGE SIGN	104.19				
1020 120890	75	PER UNIT DAY PROTECTION VEHICLE	104.23				
1021 130840	LUMP SUM	CONSTRUCTION STAKEOUT	107	LUMP SUM			
1022 130850	LUMP SUM	MOBILIZATION	108	LUMP SUM			

END OF CATEGORY NO. 1

ITEM NO. CCS NO.	APPROXIMATE QUANTITIES	DESCRIPTION OF ITEMS	SECTION	UNIT PRICE DOLLARS	UNIT PRICE CENTS	AMOUNTS DOLLARS	AMOUNTS CENTS
2001 201032	50	CUBIC YARDS OF CLASS 2 EXCAVATION	201				
2002 203030	35	CUBIC YARDS OF TEST PIT EXCAVATION	205				

END OF CATEGORY NO. 2

ITEM NO. CCS NO.	APPROXIMATE QUANTITIES	DESCRIPTION OF ITEMS	SECTION	UNIT PRICE DOLLARS	UNIT PRICE CENTS	AMOUNTS DOLLARS	AMOUNTS CENTS
3001 301318	20	CUBIC YARDS OF MIX 6 CONCRETE FOR MISCELLANEOUS STRUCTURES	305				
3002 301320	4,800	LINEAR FEET OF CLEAN EXISTING PIPE ANY SIZE	305				
3003 379122	25	LINEAR FEET OF STANDARD TYPE S INLET, DOUBLE GRATE TANDEM - VERTICAL DEPTH	305				
3004 379125	6	EACH OF STANDARD TYPE S COMBINATION INLET, DOUBLE GRATE TANDEM - MINIMUM DEPTH	305				
3005 388063	2	EACH OF PORTABLE SEDIMENT TANK	308				

END OF CATEGORY NO. 3

ITEM NO. CCS NO.	APPROXIMATE QUANTITIES	DESCRIPTION OF ITEMS	SECTION	UNIT PRICE DOLLARS	UNIT PRICE CENTS	AMOUNTS DOLLARS	AMOUNTS CENTS
5001 500000	10	SQUARE YARDS OF 8 INCH MODIFIED MIX NO. 6 FOR DRIVEWAYS	XXX				
5002 504092	3,400	TONS OF HOT MIX ASPHALT SUPERPAVE 9.5MM FOR BASE, PG64-22, LEVEL-2	504				
5003 504102	10	TONS OF HOT MIX ASPHALT SUPERPAVE 9.5mm FOR WEDGE/LEVEL, PG64-22, LEVEL -2	504				
5004 504172	3,400	TONS OF HOT MIX ASPHALT SUPERPAVE 9.5mm, PG76-22, 8PV, LEVEL-4	504				
5005 504428	80	TONS OF HOT MIX ASPHALT SUPERPAVE 25.0mm FOR FULL DEPTH PATCH, PG64-22, LEVEL-2	505				
5006 504440	40	TONS OF HOT MIX ASPHALT SUPERPAVE 25.0mm FOR PARTIAL DEPTH PATCH, PG64-22, LEVEL-2	505				

ITEM NO. CCS NO.	APPROXIMATE QUANTITIES	DESCRIPTION OF ITEMS	SECTION	UNIT PRICE DOLLARS	UNIT PRICE CENTS	AMOUNTS DOLLARS	AMOUNTS CENTS
5007 504605	19,425	EACH OF PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	504 SP	1	00	19,425	00
5008 504610	19,425	EACH OF PAYMENT ADJUSTMENT FOR HOT MIX ASPHALT MIXTURE	504 SP	1	00	19,425	00
5009 530100	38,100	SQUARE YARDS OF GRINDING HOT MIX ASPHALT PAVEMENT 0 INCH TO 2 INCH	509				
5010 535100	28,000	EACH OF PAVEMENT SURFACE PROFILE PAY ADJUSTMENT	535 SP	1	00	28,000	00
5011 571015	3,000	SQUARE YARDS OF PLAIN PORTLAND CEMENT CONCRETE PAVEMENT TYPE I REPAIRS	522				
5012 585405	17,650	LINEAR FEET OF 5 INCH WHITE LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS	553 SP				

ITEM NO. CCS NO.	APPROXIMATE QUANTITIES	DESCRIPTION OF ITEMS	SECTION	UNIT PRICE DOLLARS	UNIT PRICE CENTS	AMOUNTS DOLLARS	AMOUNTS CENTS
5013 585407	8,400	LINEAR FEET OF 5 INCH YELLOW LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS	553 SP				
5014 585412	2,250	LINEAR FEET OF 12 INCH WHITE LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS	553 SP				
5015 585612	3	EACH OF PERMANENT PREFORMED PATTERNED REFLECTIVE PAVEMENT MARKING ARROWS	559 SP				
5016 585621	1,050	LINEAR FEET OF 12 INCH WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINES	556 SP				
5017 585625	450	LINEAR FEET OF 24 INCH WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINES	556 SP				
5018 585627	80	SQUARE FEET OF WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LEGENDS AND SYMBOLS	556 SP				

END OF CATEGORY NO. 5

ITEM NO. CCS NO.	APPROXIMATE QUANTITIES	DESCRIPTION OF ITEMS	SECTION	UNIT PRICE DOLLARS	UNIT PRICE CENTS	AMOUNTS DOLLARS	AMOUNTS CENTS
6001 634300	1,400	LINEAR FEET OF STANDARD TYPE A COMBINATION CURB AND GUTTER 12 INCH GUTTER PAN 8 INCH DEPTH	602				
6002 648140	15	LINEAR FEET OF MONOLITHIC CONCRETE MEDIAN 4 FEET 0 INCH WIDE TYPE A-1	602				
6003 655105	5,810	SQUARE FEET OF 5 INCH CONCRETE SIDEWALK	603				
6004 655120	310	SQUARE FEET OF DETECTABLE WARNING SURFACE FOR CURB RAMPS	611				

END OF CATEGORY NO. 6

ITEM NO. CCS NO.	APPROXIMATE QUANTITIES	DESCRIPTION OF ITEMS	SECTION	UNIT PRICE DOLLARS	UNIT PRICE CENTS	AMOUNTS DOLLARS	AMOUNTS CENTS
7001 704345	1,300	SQUARE YARDS OF PLACING FURNISHED TOPSOIL 4 INCH DEPTH	701				
7002 708220	1,300	SQUARE YARDS OF TURFGRASS SOD ESTABLISHMENT	708				

END OF CATEGORY NO. 7

ITEM NO. CCS NO.	APPROXIMATE QUANTITIES	DESCRIPTION OF ITEMS	SECTION	UNIT PRICE DOLLARS	UNIT PRICE CENTS	AMOUNTS DOLLARS	AMOUNTS CENTS
8001 800000	16	EACH OF 16 INCH COUNTDOWN PEDESTRIAN SIGNAL HEAD	XXX				
8002 800000	3	EACH OF 2 WIRE CENTRAL CONTROL UNIT	XXX				
8003 800000	16	EACH OF AUDIBLE TACTILE PEDESTRIAN PUSHBUTTON AND SIGNS	XXX				
8004 800000	3	EACH OF REMOVE AND DISPOSE PER ASSIGNMENT	XXX				
8005 800000	1	EACH OF WEATHERHEAD, 4 INCH	XXX				
8006 800000	300	LINEAR FEET OF 1 CONDUCTOR (NO 250 KCMIL)	XXX				

ITEM NO. CCS NO.	APPROXIMATE QUANTITIES	DESCRIPTION OF ITEMS	SECTION	UNIT PRICE DOLLARS	UNIT PRICE CENTS	AMOUNTS DOLLARS	AMOUNTS CENTS
8007 801004	25	CUBIC YARDS OF CONCRETE FOR SIGNAL FOUNDATION	801				
8008 802501	1,180	LINEAR FEET OF NO. 6 AWG STRANDED BARE COPPER GROUND WIRE	810				
8009 805125	150	LINEAR FEET OF 2 INCH SCHEDULE 80 RIGID PVC CONDUIT-TRENCHED	805				
8010 805135	515	LINEAR FEET OF 3 INCH SCHEDULE 80 RIGID PVC CONDUIT-TRENCHED	805				
8011 805155	670	LINEAR FEET OF 4 INCH SCHEDULE 80 RIGID PVC CONDUIT-SLOTTED	805				
8012 805160	100	LINEAR FEET OF 1 INCH LIQUID TIGHT FLEXIBLE NON-METALLIC CONDUIT FOR DETECTOR SLEEVE	805				

ITEM NO. CCS NO.	APPROXIMATE QUANTITIES	DESCRIPTION OF ITEMS	SECTION	UNIT PRICE DOLLARS	UNIT PRICE CENTS	AMOUNTS DOLLARS	AMOUNTS CENTS
8013 807202	1	EACH OF METERED SERVICE PEDESTAL	807				
8014 810010	70	LINEAR FEET OF ELECTRICAL CABLE 1-CONDUCTOR NO. 4 AWG-THHN/THWN	810				
8015 811001	4	EACH OF FURNISH AND INSTALL ELECTRICAL HANDHOLE	XXX				
8016 813014	16	SQUARE FEET OF INSTALL GROUND MOUNTED SIGN	813				
8017 813015	205	SQUARE FEET OF INSTALL OVERHEAD SIGN	813				
8018 816001	4	EACH OF VIDEO DETECTION CAMERA	816				

ITEM NO. CCS NO.	APPROXIMATE QUANTITIES	DESCRIPTION OF ITEMS	SECTION	UNIT PRICE DOLLARS	UNIT PRICE CENTS	AMOUNTS DOLLARS	AMOUNTS CENTS
8019 816010	4	EACH OF CONTROL CABLE, 500 FOOT, VIDEO DETECTION CAMERA TO CONTROLLER	816				
8020 818004	10	EACH OF 10 FOOT BREAKAWAY PEDESTAL POLE	818				
8021 818030	2	EACH OF STEEL POLE WITH A SINGLE 38 FOOT MAST ARM	818				
8022 818036	2	EACH OF STEEL POLE WITH A SINGLE 50 FOOT MAST ARM	818				
8023 822002	150	LINEAR FEET OF 12-PAIR COMMUNICATION CABLE, JELLYFILLED (UNDERGROUND)	810				
8024 837001	17	EACH OF GROUND ROD - 3/4 INCH DIAMETER X 10 FOOT LENGTH	804				

ITEM NO. CCS NO.	APPROXIMATE QUANTITIES	DESCRIPTION OF ITEMS	SECTION	UNIT PRICE DOLLARS	UNIT PRICE CENTS	AMOUNTS DOLLARS	AMOUNTS CENTS
8025 860284	88	EACH OF 12 INCH LED VEHICULAR TRAFFIC SIGNAL HEAD SECTION	814				
8026 860292	1	EACH OF CUT, CLEAN, GALVANIZE AND CAP TRAFFIC SIGNAL STRUCTURE	XXX				
8027 861105	2,085	LINEAR FEET OF ELECTRICAL CABLE - 2 CONDUCTOR (NO. 14 AWG)	810				
8028 861107	2,250	LINEAR FEET OF ELECTRICAL CABLE - 5 CONDUCTOR (NO. 14 AWG)	810				
8029 861108	1,675	LINEAR FEET OF ELECTRICAL CABLE - 7 CONDUCTOR (NO. 14 AWG)	810				
8030 862101	2,125	LINEAR FEET OF LOOP WIRE ENCASED IN FLEXIBLE TUBING (NO. 14 AWG)	810				

ITEM NO. CCS NO.	APPROXIMATE QUANTITIES	DESCRIPTION OF ITEMS	SECTION	UNIT PRICE DOLLARS	UNIT PRICE CENTS	AMOUNTS DOLLARS	AMOUNTS CENTS
8031 862102	800	LINEAR FEET OF SAW CUT FOR SIGNAL (LOOP DETECTOR)	815				
8032 871202	1	EACH OF INSTALL CONTROLLER AND CABINET - BASE MOUNT	816				

END OF CATEGORY NO. 8

ITEM NO. CCS NO.	APPROXIMATE QUANTITIES	DESCRIPTION OF ITEMS SECTION	UNIT PRICE DOLLARS	UNIT PRICE CENTS	AMOUNTS DOLLARS	AMOUNTS CENTS
		AGGREGATE AMOUNT AT UNIT PRICES ALTERNATE A IS USING BID 1001-1022, 2001, 2002, 3001-3005, 5001-5018, 6001-6004, 7001, 7002, 8001-8032				
		THIS PROPOSAL SHALL BE FILLED IN BY THE BIDDER WITH PRICES IN NUMERALS AND EXTENSIONS SHALL BE MADE BY HIM.				

GENERAL MATERIAL REQUIREMENTS

CONVICT PRODUCED MATERIALS

Section 1019 of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) clarifies that materials produced by convict labor after July 1, 1991 may not be used for Federal-aid highway construction projects unless produced at a prison facility producing convict made materials for Federal-aid construction projects prior to July 1, 1987.

CONTRACT PROVISION BUY AMERICA

The Contractor shall comply with Section 165 of the Surface Transportation Assistance Act of 1982 as amended by Section 1041(a) and 1048(a) of the Intermodal Surface Transportation Efficiency Act of 1991 with regard to the furnishing and coating of iron and steel products. A nationwide waiver for this provision has been granted for pig iron and processed, pelletized, and reduced iron ore.

All bidders shall submit a bid using Domestic Iron and Steel Products with coatings that have been applied inside the United States. If the bidder elects, an additional alternate bid may be submitted using Foreign Products on one or more of the above items in this Contract.

The Contract, if awarded, will be awarded to the responsible bidder who submits the lowest total bid for the Contract based on furnishing Domestic Products unless such bid exceeds the lowest total bid based on furnishing Foreign Products by more than twenty five percent (25%). Foreign Products will not be permitted to be used as a substitution for Domestic ones after the bid has been awarded.

When steel and iron products and/or coatings are used in a project, the Contractor is not prohibited from using a minimal amount of foreign steel and iron products and/or coatings, if the cost of such materials used does not exceed one-tenth of one percent (0.1 %) of the total contract cost or $2,500, whichever is greater.

ALTERNATE BID
USING FOREIGN PRODUCTS

When a bidder elects to utilize Foreign Products on one or more items, the following summation indicating the Total Bid using Foreign Products must be completed in addition to the individual item bid tabulations.

The following instructions are given to the bidder in completing the Total Bid summation using Foreign Products:

1 - The "Bid Total" for the initial bid using Domestic Products shall be shown on line (1).

2 - The subtotal for Item Amounts using Domestic Products shall be shown on line (2), for those items which the Contractor elects to use Foreign Products.

3 - The subtotal for Item Amounts using Foreign Products shall be shown on line (3).

4 - The total Bid, utilizing Foreign Products shall be shown on line (4). The value is obtained by subtracting subtotal (2) from the Total Bid (1) and then adding subtotal (3).

Bid Total for Bid 1 using Domestic items	Line (1)_____
Total of Domestic Items	Line (2) -_____
Total of Foreign Items	Line (3) +_____
Bid Total using Foreign Items	Line (4)_____

ALTERNATE BID - USING FOREIGN PRODUCTS
BIDDER'S INSTRUCTIONS

When the bidder elects to submit a bid for one or more items using Foreign Products, the following form must be used. For each item that Foreign Products are contemplated, the appropriate "Item Numbers", "Approximate Quantities", "Description of Items", "Unit Price or Lump Sum Price", "Item Amount Domestic" and "Item Amount Foreign" shall be tabulated below as specified in the initial bid. The bidder shall indicate the unit price in dollars and cents and show the total cost of the item for each item that utilizes Foreign Products. When all items utilizing Foreign Products have been listed, the bidder shall indicate on Page 4 of 20 the subtotals of the Item Amounts for Domestic Products in Line (2) and for Foreign Products in Line (3).

Item Nos.	Approximate Quantities	Description of Items	Unit Price or Lump Sum Dollars.Cts.	Items Amount Domestic Dollars.Cts.	Items Amount Foreign Dollars.Cts.

BID/PROPOSAL AFFIDAVIT

A. AUTHORIZED REPRESENTATIVE AND AFFIANT

I HEREBY AFFIRM THAT:

I am the (title) _____ and the duly authorized representative of (business) _____ and that I possess the legal authority to make this Affidavit on behalf of myself and the business for which I am acting.

B. CERTIFICATION REGARDING COMMERCIAL NONDISCRIMINATION

The undersigned bidder or offeror hereby certifies and agrees that the following information is correct:

In preparing its bid on this project, the bidder or offeror has considered all proposals submitted from qualified, potential subcontractors and suppliers, and has not engaged in "discrimination" as defined in §19-103 of the State Finance and Procurement Article of the Annotated Code of Maryland. "Discrimination" means any disadvantage, difference, distinction, or preference in the solicitation, selection, hiring, or commercial treatment of a vendor, subcontractor, or commercial customer on the basis of race, color, religion, ancestry, or national origin, sex, age, marital status, sexual orientation, or on the basis of disability or any otherwise unlawful use of characteristics regarding the vendors, supplier's or commercial customer's employees or owners. "Discrimination" also includes retaliating against any person or other entity for reporting any incident of "discrimination". Without limiting any other provision of the solicitation on this project, it is understood that, if the certification is false, such false certification constitutes grounds for the State to reject the bid submitted by the bidder or offeror on this project, and terminate any contract awarded based on the bid. As part of its bid or proposal, the bidder or offeror herewith submits a list of all instances within the past 4 years where there has been a final adjudicated determination in a legal or administrative proceeding in the state of Maryland that the bidder or offeror discriminated against subcontractors, vendors, suppliers, or commercial customers, and a description of the status or resolution of that determination, including any remedial action taken. Bidder or Offeror agrees to comply in all respects with the State's Commercial Nondiscrimination Policy as described under Title 19 of the State Finance and Procurement Article of the Annotated Code of Maryland.

C. AFFIRMATION REGARDING BRIBERY CONVICTIONS

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business (as is defined in Section 16-101(b) of the State Finance and Procurement Article of the Annotated Code of Maryland), or any of its officers, directors, partners, controlling stockholders, or any of its employees directly involved in the business's contracting activities has been convicted of, or has had probation before judgment imposed pursuant to Criminal Procedure Article, §6-220, Annotated Code of Maryland, or has pleaded nolo contendere to a charge of, bribery, attempted bribery, or conspiracy to bribe in violation of Maryland law, or of the law of any other state or federal law, except as follows (indicate the reasons why the affirmation cannot be given and list any conviction, plea, or imposition of probation before judgment with the date, court, official or administrative body, the sentence or disposition, the name(s) of person(s) involved, and their current positions and responsibilities with the business):

_____
_____
_____.

D. AFFIRMATION REGARDING OTHER CONVICTIONS

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business, or any of its officers, directors, partners, controlling stockholders, or any of its employees directly involved in the business's contracting activities including obtaining or performing contracts with public bodies, has:

1. Been convicted under state or federal statute of:
   (a) a criminal offense incident to obtaining, attempting to obtain, or performing a public or private contract; or

   (b) fraud, embezzlement, theft, forgery, falsification or destruction of records, or receiving stolen property;

2. Been convicted of any criminal violation of a state or federal antitrust statute;

3. Been convicted under the provisions of Title 18 of the United States Code for violation of the Racketeer Influenced and Corrupt Organization Act, 18 U.S.C. §1961, et seq., or the Mail Fraud Act, 18 U.S.C. §1341, et seq., for acts in connection with the submission of bids or proposals for a public or private contract;

4. Been convicted of a violation of the State Minority Business Enterprise Law, Section 14-308 of the State Finance and Procurement Article of the Annotated Code of Maryland;

5. Been convicted of a violation of the Section 11-205.1 of the State Finance and Procurement Article of the Annotated Code of Maryland;

6. Been convicted of conspiracy to commit any act or omission that would constitute grounds for conviction or liability under any law or statute described in subsection (1) through (5) above;

7. Been found civilly liable under a state or federal antitrust statute for acts or omissions in connection with the submission of bids or proposals for a public or private contract;

8. Been found in a final adjudicated decision to have violated the Commercial Nondiscrimination Policy under Title 19 of the State Finance and Procurement Article of the Annotated Code of Maryland with regard to a public or private contract; or

9. Admitted in writing or under oath, during the course of an official investigation or other proceedings, acts or omissions that would constitute grounds for conviction or liability under any law or statute described in Section B and subsections (1) through (7) above, except as follows (indicate reasons why the affirmations cannot be given, and list any conviction, plea, or imposition of probation before judgment with the date, court, official or administrative body, the sentence or disposition, the name(s) of the person(s) involved and their current positions and responsibilities with the business, and the status of any debarment):
_____
_____
_____.

E. AFFIRMATION REGARDING DEBARMENT

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business, or any of its officers, directors, partners, controlling stockholders, or any of its employees directly involved in the business's contracting activities, has ever been suspended or debarred (including being issued a limited denial of participation) by any public entity, except as follows (list each debarment or suspension providing the dates of the suspension or debarment, the name of the public entity and the status of the proceedings, the name(s) of the person(s) involved and their current positions and responsibilities with the business, the grounds of the debarment or suspension, and the details of each person's involvement in any activity that formed the grounds of the debarment or suspension): _____

F. AFFIRMATION REGARDING DEBARMENT OF RELATED ENTITIES

I FURTHER AFFIRM THAT:

1. The business was not established and it does not operate in a manner designed to evade the application of or defeat the purpose of debarment pursuant to Sections 16-101, et seq., of the State Finance and Procurement Article of the Annotated Code of Maryland; and

2. The business is not a successor, assignee, subsidiary, or affiliate of a suspended or debarred business, except as follows (you must indicate the reasons why the affirmations cannot be given without qualification):

_____
_____
_____

G. SUB-CONTRACT AFFIRMATION

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business, has knowingly entered into a contract with a public body under which a person debarred or suspended under Title 16 of the State Finance and Procurement Article of the Annotated Code of Maryland will provide, directly or indirectly, supplies, services, architectural services, construction related services, leases of real property, or construction.

H. AFFIRMATION REGARDING COLLUSION

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business has:

1. Agreed, conspired, connived, or colluded to produce a deceptive show of competition in the compilation of the accompanying bid or offer that is being submitted;

2. In any manner, directly or indirectly, entered into any agreement of any kind to fix the bid price or price proposal of the bidder or Offeror or of any competitor, or otherwise taken any action in restraint of free competitive bidding in connection with the contract for which the accompanying bid or offer is submitted.

I. FINANCIAL DISCLOSURE AFFIRMATION

I FURTHER AFFIRM THAT:

I am aware of, and the above business will comply with, the provisions of Section 13-221 of the State Finance and Procurement Article of the Annotated Code of Maryland, which require that every business that enters into contracts, leases, or other agreements with the State of Maryland or its agencies during a calendar year under which the business is to receive in the aggregate $100,000 or more shall, within 30 days of the time when the aggregate value of the contracts, leases, or other agreements reaches $100,000, file with the Secretary of State of Maryland certain specified information to include disclosure of beneficial ownership of the business.

J. POLITICAL CONTRIBUTION DISCLOSURE AFFIRMATION

I FURTHER AFFIRM THAT:

I am aware of, and the above business will comply with, Election Law Article, §§14-101—14-108, Annotated Code of Maryland, which requires that every person that enters into contracts, leases, or other agreements with the State of Maryland, including its agencies or a political subdivision of the State, during a calendar year in which the person receives in the aggregate $100,000 or more shall file with the State Board of Elections a statement disclosing contributions in excess of $500 made during the reporting period to a candidate for elective office in any primary or general election.

K. DRUG AND ALCOHOL FREE WORKPLACE

(Applicable to all contracts unless the contract is for a law enforcement agency and the agency head or the agency head's designee has determined that application of COMAR 21.11.08 and this certification would be inappropriate in connection with the law enforcement agency's undercover operations.)

I CERTIFY THAT:

1. Terms defined in COMAR 21.11.08 shall have the same meanings when used in this certification.

2. By submission of its bid or offer, the business, if other than an individual, certifies and agrees that, with respect to its employees to be employed under a contract resulting from this solicitation, the business shall:

(a) Maintain a workplace free of drug and alcohol abuse during the term of the contract;

(b)Publish a statement notifying its employees that the unlawful manufacture, distribution, dispensing, possession, or use of drugs, and the abuse of drugs or alcohol is prohibited in the business' workplace and specifying the actions that will be taken against employees for violation of these prohibitions;

(c) Prohibit its employees from working under the influence of drugs or alcohol;

(d) Not hire or assign to work on the contract anyone whom the business knows, or in the exercise of due diligence should know, currently abuses drugs or alcohol and is not actively engaged in a bona fide drug or alcohol abuse assistance or rehabilitation program;

(e) Promptly inform the appropriate law enforcement agency of every drug-related crime that occurs in its workplace if the business has observed the violation or otherwise has reliable information that a violation has occurred;

(f) Establish drug and alcohol abuse awareness programs to inform its employees about:

(i) The dangers of drug and alcohol abuse in the workplace;
(ii) The business' policy of maintaining a drug and alcohol free workplace;
(iii) Any available drug and alcohol counseling, rehabilitation, and employee assistance programs; and
(iv) The penalties that may be imposed upon employees who abuse drugs and alcohol in the workplace;

(g) Provide all employees engaged in the performance of the contract with a copy of the statement required by §J(2)(b), above;

(h) Notify its employees in the statement required by §J(2)(b), above, that as a condition of continued employment on the contract, the employee shall:

(i) Abide by the terms of the statement; and
(ii) Notify the employer of any criminal drug or alcohol abuse conviction for an offense occurring in the workplace not later than 5 days after a conviction;

(i) Notify the procurement officer within 10 days after receiving notice under §J(2)(h)(ii), above, or otherwise receiving actual notice of a conviction;

(j) Within 30 days after receiving notice under §J(2)(h)(ii), above, or otherwise receiving actual notice of a conviction, impose either of the following sanctions or remedial measures on any employee who is convicted of a drug or alcohol abuse offense occurring in the workplace:

(i) Take appropriate personnel action against an employee, up to and including termination; or
(ii) Require an employee to satisfactorily participate in a bona fide drug or alcohol abuse assistance or rehabilitation program; and

(k) Make a good faith effort to maintain a drug and alcohol free workplace through implementation of §J(2)(a)—(j), above.

3. If the business is an individual, the individual shall certify and agree as set forth in §J(4), below, that the individual shall not engage in the unlawful manufacture, distribution, dispensing, possession, or use of drugs or the abuse of drugs or alcohol in the performance of the contract.

4. I acknowledge and agree that:

(a) The award of the contract is conditional upon compliance with COMAR 21.11.08 and this certification;

(b) The violation of the provisions of COMAR 21.11.08 or this certification shall be cause to suspend payments under, or terminate the contract for default under COMAR 21.07.01.11 or 21.07.03.15, as applicable; and

(c) The violation of the provisions of COMAR 21.11.08 or this certification in connection with the contract may, in the exercise of the discretion of the Board of Public Works, result in suspension and debarment of the business under COMAR 21.08.03.

L. CERTIFICATION OF CORPORATION REGISTRATION AND TAX PAYMENT

I FURTHER AFFIRM THAT:

1 The business named above is a (domestic ___) (foreign __) corporation registered in accordance with the Corporations and Associations Article, Annotated Code of Maryland, and that it is in good standing and has filed all of its annual reports, together with filing fees, with the Maryland State Department of Assessments and Taxation, and that the name and address of its resident agent filed with the State Department of Assessments and Taxation is (IF NOT APPLICABLE, SO STATE):

Name: _____
Address: _____
_____
_____

2. Except as validly contested, the business has paid, or has arranged for payment of, all taxes due the State of Maryland and has filed all required returns and reports with the Comptroller of the Treasury, the State Department of Assessments and Taxation, and the Department of Labor, Licensing, and Regulation, as applicable, and will have paid all withholding taxes due the State of Maryland prior to final settlement.

M. CONTINGENT FEES

I FURTHER AFFIRM THAT:

The business has not employed or retained any person, partnership, corporation, or other entity, other than a bona fide employee, bona fide agent, bona fide salesperson, or commercial selling agency working for the business, to solicit or secure the Contract, and that the business has not paid or agreed to pay any person, partnership, corporation, or other entity, other than a bona fide employee, bona fide agent, bona fide salesperson, or commercial selling agency, any fee or any other consideration contingent on the making of the Contract.

N. REPEALED

O. ACKNOWLEDGEMENT

I ACKNOWLEDGE THAT this Affidavit is to be furnished to the Procurement Officer and may be distributed to units of: (1) the State of Maryland; (2) counties or other subdivisions of the State of Maryland; (3) other states; and (4) the federal government. I further acknowledge that this Affidavit is subject to applicable laws of the United States and the State of Maryland, both criminal and civil, and that nothing in this Affidavit or any contract resulting from the submission of this bid or proposal shall be construed to supersede, amend, modify or waive, on behalf of the State of Maryland, or any unit of the State of Maryland having jurisdiction, the exercise of any statutory right or remedy conferred by the Constitution and the laws of Maryland with respect to any misrepresentation made or any violation of the obligations, terms and convenants undertaken by the above business with respect to (1) this Affidavit, (2) the contract, and (3) other Affidavits comprising part of the contract.

I DO SOLEMNLY DECLARE AND AFFIRM UNDER THE PENALTIES OF PERJURY THAT THE CONTENTS OF THIS AFFIDAVIT ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF.

Date: _____ By: _____
(Authorized Representative and Affiant)

COMPREHENSIVE SIGNATURE PAGE 1 OF 2

THE BIDDER IS HEREBY NOTIFIED THAT THIS DOCUMENT SHALL BE SIGNED IN INK IN ORDER FOR THE BID TO BE ACCEPTED. BY SIGNING, THE BIDDER CERTIFIES THAT HE/SHE WILL COMPLY IN EVERY ASPECT WITH THESE SPECIFICATIONS.

FURTHER, I DO SOLEMNLY DECLARE AND AFFIRM UNDER THE PENALTIES OF PERJURY THAT THE CONTENTS OF THIS AFFIDAVIT (PARAGRAPHS A-N) ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF.

This bid form shall be filled out legibly in ink or typed. The bid, if submitted by an individual, shall be signed by an individual; if submitted by a partnership, shall be signed by such member or members of the partnership as have authority to bind the partnership; if submitted by a corporation the same shall be signed by the President and attested by the Secretary or an Assistant Secretary. If not signed by the President as aforesaid, there must be attached a copy of that portion of the By-Laws, or a copy of a Board resolution, duly certified by the Secretary, showing the authority of the person so signing on behalf of the corporation. In lieu thereof, the corporation may file such evidence with the Administration, duly certified by the Secretary, together with a list of the names of those officers having authority to execute documents on behalf of the corporation, duly certified by the Secretary, which listing shall remain in full force and effect until such time as the Administration is advised in writing to the contrary. In any case where a bid is signed by an Attorney in Fact the same must be accompanied by a copy of the appointing document, duly certified.

IF AN INDIVIDUAL:

NAME:_____

_____
Street and/or P.O. Box

_____ _____
City State Zip Code Fed ID or SSN

_____(SEAL)_____
Signature Date

_____
Print Signature

WITNESS:_____
Signature

_____
Print Signature

COMPREHENSIVE SIGNATURE PAGE 2 OF 2

IF A PARTNERSHIP:

NAME OF PARTNERSHIP:_____

_____
Street and/or P.O. Box

_____ _____
City State Zip Code Fed ID or SSN

BY:_____(SEAL) _____
Member Signature Date

_____
Print Signature

TITLE:_____ WITNESS:_____
Signature

_____
Print Signature

IF A CORPORATION:

NAME OF CORPORATION:_____

_____
Street and/or P.O. Box

_____ _____
City State Zip Code Fed ID or SSN

STATE OF INCORPORATION:_____

BY:_____(SEAL) _____
Signature Date

_____
Print Signature

TITLE:_____ WITNESS:_____
Secretary's Signature

_____
Print Signature

MDOT DBE FORM A - (MDOT-OP 016-2)
FEDERALLY-FUNDED CONTRACTS (BIDS ONLY)
CERTIFIED DBE UTILIZATION AND FAIR SOLICITATION AFFIDAVIT
Page 1 of 2

THIS AFFIDAVIT MUST BE INCLUDED WITH THE BID. IF THE BIDDER FAILS TO ACCURATELY COMPLETE AND SUBMIT THIS AFFIDAVIT AS REQUIRED, THE BID SHALL BE DEEMED NOT RESPONSIVE.

In connection with the proposal submitted in response to Solicitation No. MO4295168, I affirm the following:

1. **DBE Participation (PLEASE CHECK ONLY ONE)**

☐ I have met the overall certified Disadvantaged Business Enterprise (DBE) participation goal of Thirty percent (30%). I agree that the DBE firms listed in the DBE Participation Schedule - Part 2 of the MDOT DBE Form B (Federally-Funded Contracts – Bids Only) will be used to accomplish the DBE participation goal for this Contract for at least the dollar amounts set forth therein.

OR

☐ I conclude that I am unable to achieve the DBE participation goal. I hereby request a waiver of the overall goal. Within 10 business days of receiving notice that our firm is the apparent awardee or as requested by the Procurement Officer, I will submit a written waiver request and all required documentation in accordance with COMAR 21.11.03.11. I agree that the DBE firms listed in the DBE Participation Schedule - Part 2 of the MDOT DBE Form B (Federally-Funded Contracts – Bids Only) will be used to accomplish the DBE participation goal for this Contract for at least the dollar amounts set forth therein.

2. **Additional DBE Documentation**

I understand that if I am notified that I am the apparent awardee or as requested by the Procurement Officer, I must submit the following documentation within 10 business days of receiving such notice:
(a) Outreach Efforts Compliance Statement (MDOT DBE Form C - Federally-Funded Contracts – Bids Only);
(b) Subcontractor Project Participation Statement (MDOT DBE Form D - Federally-Funded Contracts – Bids Only);
(c) DBE Waiver Request documentation per COMAR 21.11.03.11 (if waiver was requested); and
(d) Any other documentation required by the Procurement Officer to ascertain bidder's responsibility in connection with the certified DBE participation goal.

I acknowledge that if I fail to return each completed document (in 2 (a) through (d)) within the required time, the Procurement Officer may determine that I am not responsible and therefore not eligible for contract award.

MDOT DBE FORM A - (MDOT-OP 016-2)
FEDERALLY-FUNDED CONTRACTS (BIDS ONLY)
CERTIFIED DBE UTILIZATION AND FAIR SOLICITATION AFFIDAVIT
Page 2 of 2

3. Information Provided to DBE firms

In the solicitation of subcontract quotations or offers, DBE firms were provided not less than the same information and amount of time to respond as were non-DBE firms.

I solemnly affirm under the penalties of perjury that the information in this affidavit is true to the best of my knowledge, information and belief.

_____	_____
Company Name	Signature of Representative
_____	_____
Address	Printed Name and Title
_____	_____
City, State and Zip Code	Date

SUBMIT THIS AFFIDAVIT WITH BID/PROPOSAL

MDOT DBE FORM B - (MDOT-OP 017-2)
FEDERALLY-FUNDED CONTRACTS (BIDS ONLY)
DBE PARTICIPATION SCHEDULE

PART 1 – INSTRUCTIONS FOR DBE PARTICIPATION SCHEDULE
Page 1 of 3

PARTS 2 AND 3 MUST BE INCLUDED WITH THE BID. IF THE BIDDER FAILS TO ACCURATELY COMPLETE AND SUBMIT PART 2 AND 3 WITH THE BID AS REQUIRED, THE BID SHALL BE DEEMED NOT RESPONSIVE.

***** STOP *****
FORM INSTRUCTIONS
PLEASE READ BEFORE COMPLETING THIS FORM

1. Please refer to the Maryland Department of Transportation (MDOT) DBE Directory at www.mdot.state.md.us to determine if a firm is certified for the appropriate North American Industry Classification System ("NAICS") Code **and** the product/services description (specific product that a firm is certified to provide or specific areas of work that a firm is certified to perform). For more general information about NAICS, please visit www.naics.com. Only those specific products and/or services for which a firm is certified in the MDOT Directory can be used for purposes of achieving the DBE participation goal.

2. In order to be counted for purposes of achieving the DBE participation goal, the firm must be certified for that specific NAICS ("DBE" for Federally-funded projects designation after NAICS Code). **WARNING:** If the firm's NAICS Code is in **graduated status**, such services/products **will not be counted** for purposes of achieving the DBE participation goal. Graduated status is clearly identified in the MDOT Directory (such graduated codes are designated with the letter "G" after the appropriate NAICS Code).

3. Examining the NAICS Code is the **first step** in determining whether a DBE firm is certified and eligible to receive DBE participation credit for the specific products/services to be supplied or performed under the contract. The **second step** is to determine whether a firm's Products/Services Description in the DBE Directory includes the products to be supplied and/or services to be performed that are used to achieve the DBE participation goal.

4. If you have any questions as to whether a firm is certified to perform the specific services or provide specific products, please call MDOT's Office of Minority Business Enterprise at 1-800-544-6056 or send an email to mbe@mdot.state.md.us.

5. The Contractor's subcontractors are considered second-tier subcontractors. Third-tier contracting used to meet a DBE goal is to be considered the exception and not the rule. The following two conditions must be met before MDOT, its Modal Administrations and the Maryland Transportation Authority may approve a third-tier contracting agreement: (a) the bidder must request in writing approval of each third-tier contract arrangement, and (b) the request must contain specifics as to why a third-tier contracting arrangement should be approved. These documents must be submitted with the bid in Part 2 of this DBE Participation Schedule.

MDOT DBE FORM B - (MDOT-OP 017-2)
FEDERALLY-FUNDED CONTRACTS (BIDS ONLY)
PART 1 – INSTRUCTIONS FOR DBE PARTICIPATION SCHEDULE
Page 2 of 3

6. For each DBE firm that is being used as supplier/wholesaler/regular dealer/broker/manufacturer, please follow these instructions for calculating the **dollar amount of the subcontract for purposes of achieving the DBE participation goal**:

   A. Is the firm certified as a broker of the products/supplies? If the answer is YES, please continue to Item C. If the answer is NO, please continue to Item B.

   B. Is the firm certified as a supplier, wholesaler, regular dealer, or manufacturer of such products/supplies? If the answer is YES, continue to Item D. If the answer is NO, continue to Item C only if the DBE firm is certified to perform trucking/hauling services under NAICS Codes 484110, 484121, 484122, 484210, 484220 and 484230. If the answer is NO and the firm is not certified under these NAICS Codes, then no DBE participation credit will be given for the supply of these products.

   C. For purposes of achieving the DBE participation goal, you may count only the amount of any reasonable fee that the DBE firm will receive for the provision of such products/supplies - not the total subcontract amount or the value (or a percentage thereof) of such products and/or supplies. In Column 5 of the DBE Participation Schedule, please state the amount of any reasonable fee that the DBE firm will receive for the provision of such products/services in Section 5.3.

   D. Is the firm certified as a manufacturer (refer to the firm's NAICS Code and specific description of products/services) of the products/supplies to be provided? If the answer is NO, please continue to Item E. If the answer is YES, for purposes of achieving the DBE participation goal, you may count the total amount of the subcontract. In Column 5 of the DBE Participation Schedule, please state the total amount of the subcontract in Section 5.1.

   E. Is the firm certified as a supplier, wholesaler and/or regular dealer? If the answer is YES (i) if the DBE firm is furnishing and installing the materials and is certified to perform these services, please include in Section 5.1 the total value of the subcontract amount (including full value of supplies); or (ii) if the firm is only being used as a supplier, wholesaler and/or regular dealer or is not certified to install the supplies/materials, for purposes of achieving the DBE participation goal, you may only count sixty percent (60%) of the value of the subcontract for these supplies/products (60% Rule). In Column 5, Section 5.2 of the DBE Participation Schedule, please state amount of the subcontract for these supplies/products only (not installation) and sixty percent (60%) of such value.

7. Cumulative credit given for the use of all DBE suppliers/wholesalers/regular dealers/brokers/manufacturer in the DBE Participation Schedule cannot exceed sixty percent (60%) of the entire DBE participation goal. For example, if your bid is $100,000 and you have indicated that you will achieve $25,000 in DBE Participation, the cumulative participation by DBE firms that are suppliers, manufacturers, wholesalers, brokers and regular dealers cannot exceed $15,000 (or 60% of $25,000).

MDOT DBE FORM B - (MDOT-OP 017-2)
FEDERALLY-FUNDED CONTRACTS (BIDS ONLY)
PART 1 – INSTRUCTIONS FOR DBE PARTICIPATION SCHEDULE
Page 3 of 3

8. Please note that for USDOT-funded projects, a DBE prime may count towards its DBE participation goal, work performed by its own forces. Include information about the DBE prime in Part 2.

9. **WARNING:** The percentage of DBE participation, computed using the dollar amounts in Column 5 for all of the DBE firms listed in Part 2, MUST equal at least the DBE participation goal as set forth in MDOT DBE Form A – Federally-Funded Contracts (Bids Only) for this solicitation. If a bidder is unable to achieve the DBE participation goal, then the bidder must request a waiver in Form A or the bid shall be deemed not responsive. You may wish to use the Worksheet shown below to assist you in calculating the percentages and confirming that you have met the applicable DBE participation goal.

WORKSHEET

Total DBE Firm Participation Amount	$_____
(Add amounts listed for all DBE Firms in Column 5 of DBE Participation Schedule)	
Divide by Total Contract Amount	+_____
Percent Overall DBE Participation	**=_____%**

MDOT DBE FORM B - (MDOT-OP 017-2)
FEDERALLY-FUNDED CONTRACTS (BIDS ONLY)
PART 2 – DBE PARTICIPATION SCHEDULE

PARTS 2 AND 3 MUST BE INCLUDED WITH THE BID. IF THE BIDDER FAILS TO ACCURATELY COMPLETE AND SUBMIT PART 2 AND 3 WITH THE BID AS REQUIRED, THE BID SHALL BE DEEMED NOT RESPONSIVE.

Page __ of ___

Prime Contractor	Project Description	Solicitation Number

List Information for each Certified MBE Subcontractor used to achieve the DBE Participation Goal.

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5 **Unless the bidder requested a waiver in MDOT DBE Form A – Federally Funded Contracts (Bids Only) for this solicitation, the cumulative DBE participation for all DBE firms listed herein must equal at least the DBE participation goal set forth in Form A.**
Name of DBE Subcontractor and tier	**Certification No. and DBE Classification**	**Total Subcontractor Amount**	**NAICS Codes/s** **NAICS Code/s of the specific products to be supplied or services to be performed by the DBE firm**	**Dollar Amount(s) for purposes of achieving the DBE Participation Goal.** State the dollar amount of the products/services in Line 5.1 except for those services or products where the DBE firm is being used as a wholesaler, supplier, regular dealer, or broker. For those items of work where the DBE firm is being used as a supplier, wholesaler and/or regular dealer complete Line 5.2 using the 60% Rule. For those items of work where the DBE firm is being used as a broker, complete Line 5.3.
☐ Please check if DBE firm is a third-tier contractor (if applicable). Please submit written documents in accordance with Section 5 of Part 1 - Instructions	Certification Number: _____ ☐ Women-Owned ☐ African American-Owned ☐ Other DBE Classification	**$**		**5.1 Subcontract Amount for Products/Services** (Excluding Products/Services from Suppliers, Wholesalers, Regular Dealers and Brokers) $ **5.2 Amount for Items of Work where the MBE firm is being used as Suppliers, Wholesalers and/or Regular Dealers)** (Please refer to Section 6(E) in Part 1 - Instructions). Total value of Supplies/Products $ X 60% (60% Rule) = $ (amount for purposes of achieving the DBE Participation Goal). **5.3 Amount of Fee where DBE firm is being used as Broker (**Please refer to Section 6(C) in Part 1 - instructions). _____$

☐Please check if Continuation Sheets are attached.

MDOT DBE FORM B - (MDOT-OP 017-2)
FEDERALLY-FUNDED CONTRACTS (BIDS ONLY)
CONTINUATION SHEET
Page __ of ___

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5 **Unless the bidder requested a waiver in MDOT DBE Form A – Federally Funded Contracts (Bids Only) for this solicitation, the cumulative DBE participation for all DBE firms listed herein must equal at least the DBE participation goal set forth in Form A.**
Name of DBE Subcontractor and tier	**Certification No. and DBE Classification**	**Total Subcontractor Amount**	**NAICS Codes/s** **NAICS Code/s of the specific products to be supplied or services to be performed by the DBE firm**	**Dollar Amount(s) for purposes of achieving the DBE Participation Goal.** State the dollar amount of the products/services in Line 5.1 except for those services or products where the DBE firm is being used as a wholesaler, supplier, regular dealer, or broker. For those items of work where the DBE firm is being used as a supplier, wholesaler and/or regular dealer complete Line 5.2 using the 60% Rule. For those items of work where the DBE firm is being used as a broker, complete Line 5.3.
☐ Please check if DBE firm is a third-tier contractor (if applicable). Please submit written documents in accordance with Section 5 of Part 1 - Instructions	Certification Number: _____ ☐ Women-Owned ☐ African American-Owned ☐ Other DBE Classification	**$**		**5.1 Subcontract Amount for Products/Services** (Excluding Products/Services from Suppliers, Wholesalers, Regular Dealers and Brokers) $ **5.2 Amount for Items of Work where the MBE firm is being used as Suppliers, Wholesalers and/or Regular Dealers)** (Please refer to Section 6(E) in Part 1 - Instructions). Total value of Supplies/Products $ X 60% (60% Rule) = $ (amount for purposes of achieving the DBE Participation Goal). **5.3 Amount of Fee where DBE firm is being used as Broker (**Please refer to Section 6(C) in Part 1 - instructions). _____$

MDOT DBE FORM B - (MDOT-OP 017-2)
FEDERALLY-FUNDED CONTRACTS (BIDS ONLY)
PART 3 – CERTIFICATION FOR DBE PARTICIPATION SCHEDULE

PARTS 2 AND 3 MUST BE INCLUDED WITH THE BID. IF THE BIDDER FAILS TO ACCURATELY COMPLETE AND SUBMIT PART 2 AND 3 WITH THE BID AS REQUIRED, THE BID SHALL BE DEEMED NOT RESPONSIVE.

I hereby affirm that I have reviewed the Products and Services Description (specific product that a firm is certified to provide or areas of work that a firm is certified to perform) set forth in the MDOT DBE Directory for each of the DBE firms listed in Part 2 of this DBE Form B for purposes of achieving the DBE participation goal that was identified in the DBE Form A that I submitted with this solicitation, and that the DBE firms listed are only performing those products/services/areas of work for which they are certified. I also hereby affirm that I have read and understand the form instructions set forth in Part 1 of this DBE Form B.

I solemnly affirm under the penalties of perjury that the contents of Parts 2 and 3 of MDOT DBE Form B are true to the best of my knowledge, information and belief.

_____	_____
Company Name	Signature of Representative
_____	_____
Address	Printed Name and Title
_____	_____
City, State and Zip Code	Date

INFORMATION REQUIRED TO BE SUBMITTED FOR FEDERALLY ASSISTED CONTRACTS:

(a) Each bidder shall provide the following information:

NAME OF FIRM:_____

_____
Street and/or P.O. Box

_____
City State Zip Code

____ DBE ____ Non-DBE Age of the firm ____ years
Annual gross receipts per last calendar year _____<$500,000 ____$500,000-1,000,000
____$1,000,000-3,000,000 ____$3,000,000-5,000,000 ____$5,000,000-10,000,000
____>$10,000,000

(b) Each bidder shall provide the following information for each firm quoting or considered as subcontractors:

NAME OF FIRM:_____

_____
Street and/or P.O. Box

_____
City State Zip Code

____ DBE ____ Non-DBE Age of the firm ____ years
Annual gross receipts per last calendar year _____<$500,000 ____$500,000-1,000,000
____$1,000,000-3,000,000 ____$3,000,000-5,000,000 ____$5,000,000-10,000,000
____> $10,000,000

NAME OF FIRM:_____

_____
Street and/or P.O. Box

_____
City State Zip Code

____ DBE ____ Non-DBE Age of the firm ____ years
Annual gross receipts per last calendar year _____<$500,000 ____$500,000-1,000,000
____$1,000,000-3,000,000 ____$3,000,000-5,000,000 ____$5,000,000-10,000,000
____> $10,000,000

NAME OF FIRM:_____

_____
Street and/or P.O. Box

_____
City State Zip Code

____ DBE ____ Non-DBE Age of the firm ____ years
Annual gross receipts per last calendar year _____<$500,000 ____$500,000-1,000,000
____$1,000,000-3,000,000 ____$3,000,000-5,000,000 ____$5,000,000-10,000,000
____> $10,000,000

NAME OF FIRM:_____

_____
Street and/or P.O. Box

_____
City State Zip Code

____ DBE ____ Non-DBE Age of the firm ____ years
Annual gross receipts per last calendar year _____<$500,000 ____$500,000-1,000,000
____$1,000,000-3,000,000 ____$3,000,000-5,000,000 ____$5,000,000-10,000,000
____> $10,000,000

NAME OF FIRM:_____

_____
Street and/or P.O. Box

_____
City State Zip Code

____ DBE ____ Non-DBE Age of the firm ____ years
Annual gross receipts per last calendar year _____<$500,000 ____$500,000-1,000,000
____$1,000,000-3,000,000 ____$3,000,000-5,000,000 ____$5,000,000-10,000,000
____> $10,000,000

Submit additional copies of this page as page 26A of 28, 26B of 28, etc. as necessary, and place them as the last pages in the Invitation for Bids. Place an "X" for "NO" on the last copy. Any additional Copies: _____ NO _____ YES

EXTRA WORK, CONTRACT TIME, BONDING, LIQUIDATED DAMAGES, AND PROPOSAL GUARANTY

EXTRA WORK. It is further proposed to do all "Extra Work" which may be required to complete the work contemplated at unit prices or lump sum prices to be agreed upon in writing prior to starting such extra work, or if such prices or sums cannot be agreed upon, to perform such work on a Force Account basis as specified in TC-7.03.

CONTRACT TIME. To commence work as specified in the "Notice to Proceed" and to prosecute the work to complete the contract within/or before

100 (working days)

Any delay in awarding or the execution of this contract will not be considered as a basis for any monetary claim, however, an extension of time may be considered by the Administration, if warranted.

BONDING. When the Contractor's bid is $100,000 or more, the Contractor shall furnish a Payment Bond and a Performance Bond in the full amount of the Contract Award as security for the construction and completion of the contract in conformance with the Plans, Standard Specifications, revisions thereto, General Provisions and Special Provisions.

To guarantee all of the work performed under this contract to be done in conformance with the Standard Specifications, revisions thereto, General Provisions and Special Provisions in a good workmanlike manner and to renew or repair any work which may be rejected due to defective materials or workmanship, prior to final completion and acceptance of the work, also we have the equipment, labor, supervision and financial capacity to perform this contract either with our organization or with Subcontractors.

LIQUIDATED DAMAGES. The Contractor is hereby advised that liquidated damages in the amount of

One Thousand Eight Hundred Forty dollars ($1,840.00) per working day

will be assessed for unauthorized extensions beyond the contracted time of completion.

PROPOSAL GUARANTY. A bid security is not required on Contract Proposals under $100,000.

A bid security totaling at least five percent (5%) of the bid amount will be required on contracts of $100,000 or over.

Acceptable forms of security for bid guaranty shall be:

(1) A bond in a form satisfactory to the State underwritten by a company licensed to issue bonds in this State;

(2) A bank certified check, bank cashier's check, bank treasurer's check, or cash;

(3) Pledge of security backed by the full faith and full credit of the United States government or bonds issued by the State of Maryland.

Enclosed herewith, find bid security based on at least five percent (5%) of the aggregate amount of the bid submitted, and made payable to the "State of Maryland". This bid security is a Proposal Guarantee (which is understood will be forfeited in the event the contract is not executed, if awarded to the signer of this affidavit).

MARYLAND STATE HIGHWAY ADMINISTRATION

SUBCONTRACTING

Subcontracting by the Prime Contractor. Form OOC 42 Request for Approval of Subcontractor shall be used by the Prime Contractor to request approval of a Subcontractor and also to ensure that a formal Subcontract has been or will be written and kept on file by the Prime Contractor. Completion and submittal of the form by the Prime Contractor acknowledges that the Administration's Contracting Officer may require the submission of the written Subcontract for review by the Administration and/or FHWA.

Lower Tier Subcontracting by an Approved Subcontractor. Form OOC 43 Subcontractor's Request for Approval of Lower Tier Subcontractor shall be used by an Approved Subcontractor to request approval of a Lower Tier Subcontractor and also to ensure that a formal Subcontract has been or will be written and kept on file by the Subcontractor. Completion and submittal of the form by the Subcontractor acknowledges that the Administration's Contracting Officer may require the submission of the written Subcontract for review by the Administration and/or FHWA.

Form Acquisitions. Maryland State Highway Administration Form OOC 42 and Form OOC 43 may be acquired through the Administration's Contracts Award Team or District Office. All questions should be directed to the Office of Construction, Contracts Award Team.

It is the Administration's intention to randomly select during each calendar quarter a representative sample of written Subcontracts for review. This review will be conducted by the Office of Construction's Contracts Award Team.