MEETING MINUTES FROM THE MARICOPA ASSOCIATION OF GOVERNMENTS STANDARD SPECIFICATIONS AND DETAILS COMMITTEE

February 7, 2007

Maricopa Association of Governments Office, Cholla Room
302 North First Avenue
Phoenix, Arizona

AGENCY MEMBERS

Jim Badowich, Avondale
Steven Borst, Buckeye
David Fern, Chandler
Mark Weiner, Gilbert
Greg Rodzenko, Glendale
* David Ramirez, Goodyear
Bob Herz, MCDOT, Chairman
Kelly Jensen, Mesa
Jesse Gonzalez, Peoria
Jeff Van Skike, Phoenix (St. Trans.)
Jami Erickson, Phoenix (Water)
* Rodney Ramos, Scottsdale
Baldermar Marciales for Don Moseley, Surprise
James Bond, Tempe

ADVISORY MEMBERS

John Ashley, ACA
Nathan Durham for Jeff Benedict, AGC
Aaron Avery for Brian Gallimore, AGC
Peter Kandaris, SRP, Vice Chairman
* Don Cornelison, ARPA
Adrian Green for Don Green, ARPA
Paul R. Nebeker, Independent
William Ast, NUCA
Dale Phelan, NUCA

MAG ADMINISTRATIVE STAFF

Gordon Tyus

* Members not attending or represented by proxy.

GUESTS/VISITORS

Tom Kennedy, FNF Construction

1. Call to Order

Chairman, Bob Herz, called the meeting to order at 1:32 p.m.

2. Approval of Minutes

The members reviewed the January 3, 2007 meeting minutes and corrected the spelling of names of attendees. Kelly Jensen introduced a motion to accept the minutes as corrected. Mark Weiner seconded the motion. A voice vote of all ayes and no nays was recorded.

3. Update on Specifications and Details Inventory

Gordon Tyus reviewed the work completed on 1/31/07 by AZ Flash, LLC, for the Specifications and Details Inventory project. The contract work and all tasks are complete. A final recommendations report and a CD of the specifications and details inventory were provided to all committee members. Gordon then gave a presentation on how the CD was organized. All members were requested to note on a sheet that was passed around if they had received their CD copy and identify if they needed a hard copy printout of the CD contents (those requesting would be provided copies at the next meeting). Aaron Avery asked the committee to review the work and provide comments so that AZ Flash could make modifications within the next month.

4. 2006 Cases (old cases)

   a. **Case 06-04 – Reduced cement content for Reinforced Concrete Pipe (RCP) mixes, Section 735** (Revisions to Section 735 to eliminate the minimum fly ash and cement requirement). David Fern stated that cement and pipe industry representatives are reviewing the committee's concerns and will provide feedback later in the year.

5. 2007 Cases (new cases)

   a. **Case 07-01A – Miscellaneous Corrections**: Dimension correction to Detail 535 catch basin type "F" as proposed by Kelly Jensen. Bob Herz reviewed the proposed detail modification to change the 7-inch dimension in Section A to be consistent with the corresponding 8-inch dimension in the isometric view. During committee discussions it was suggested that the note on the detail referencing construction of the lower portion of the basin be more specific so that it is understood that the basin bottom slope be built as shown in the Type "E" basin detail. It was also suggested that the thickness of the basin bottom be shown on the detail. Kelly Jensen noted he would make changes and provide them for the next meeting.

   b. **Case 07-01B – Miscellaneous Corrections**: Drafting correction to Detail 222 single curb proposed by Bob Herz (dated 2/7/07, see attachments). Bob Herz stated that the detail should show the depth of the formed portion for Type A curbs extending 2 inches below base course as is shown with Type B curbs. Jim Badowich inquired if the specification allows extruding or slip form construction of formed curbs. The committee discussed this concept and also discussed the use of this detail for repair work. Members were requested to review and return with comments for the next meeting.

c. **Case 07-01C – Miscellaneous Corrections**: Typographic correction to Section 105.5 titled "Cooperation of Contractor" proposed by Kelly Jensen (see attachments). Committee members reviewed the proposed correction. It appears that the word "site" is missing from the sentence after the word "work". Members were requested to review and return with comments for the next meeting.

d. **Case 07-02 – Revisions to Asphalt Concrete, Section 710**: The Asphalt Paving Technical Committee provided proposed revisions to Section 710 dated 2/1/07 (see attachment). The proposed modifications are shown as split-page revisions with side-by-side narrative discussions of the proposed changes. Numerous changes are being proposed in terms of section formatting, making the section consistent with national and regional standards, use of design mixes, revisions to aggregate and anti-stripping requirements, and modifications to mix design criteria. Members were requested to review and return with comments for the next meeting.

e. **Case 07-03 – PVC Catch Basins, Proposed New Details 535-2, 535-3, 537-2, 539-2, 542-1 through 4, and 543-1 through 5**: Dale Phelan provided handouts with details and other documentation to allow the use of PVC catch basins. Dale requested that he be allowed to make a presentation at one of the next meetings to explain the background for the proposed details. The committee discussed the use of the catch basins and provided suggestions on detail presentation. Members were requested to review and return with comments for the next meeting.

f. **Case 07-04 – Revision to Water Service Taps, Section 631.3.5**: Kelly Jensen recommended removing a sentence requiring insulation of copper service pipe at corporation stops with dielectric insulators (see attachment) to make the section consistent with field practices. Members were requested to review and return with comments for the next meeting.

g. **Case 07-05 – Revision to Fire Hydrant Installation, Detail 360**: Kelly Jensen adding a new Note 7 to the detail to allow the use of joint restraint systems or thrust blocks (see attachments) to make the section consistent with field practices. Members were requested to review and return with comments for the next meeting.

6. General Discussion:

   a. Kelly Jensen requested the committee review Section 712 (Liquid Asphalt) to determine if the section is in compliance with Maricopa County Air Quality Department regulations on volatile organic compounds (commonly referred to as Rule 330). Members were requested to inquire within their agencies and return with comments for the next meeting.

   b. Jeff Van Skike noted that last year's packet for detail revisions includes new Details 220-1 and 220-2 which replace Detail 220 and are not supplemental to the old detail. The old Detail 220 should be removed from specification books.

c. Peter Kandaris presented information on the Arizona Land Subsidence Group (ALSG) to the committee. The ALSG is a professional committee that works toward understanding the effects of land subsidence and earth fissures on Arizona's land, infrastructure, and water supply and provides technical support to the Arizona Geological Survey relating to these topics. The group is comprised of state agency, state university, public utility, and consulting geoscience and engineering company representatives. Those agencies interested in participating with this group should contact Peter so that they may receive meeting notices.

d. Steven Borst stated that he understood there may be new changes being proposed at the state legislature for locating sewer taps. Committee members were requested to inquire with their agency government representatives to see if they knew of any proposed changes.

7. Adjournment:

The meeting was adjourned at 2:41 p.m.

MARICOPA COUNTY
Department of Transportation

MEMORANDUM

Date: Feb 7, 2007

To: MAG Specifications and Details Committee

From: Robert Herz, MCDOT Representative

Subject: Miscellaneous Bloopers **Case 07-01 B**

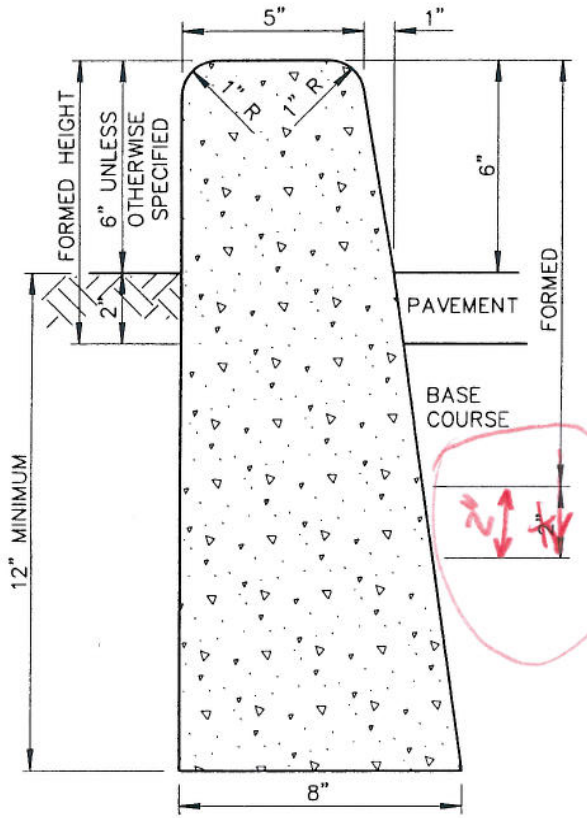
PURPOSE: Drafting Correction to Detail 222 – Correct indicated formed surface distance shown for Type 'A' Curb.

REVISION:

Detail 222, Type 'A' Detail:

Increase length of "Formed" surface reference arrows to extend to two inches (2") below the bottom of the base course as shown for Type 'B'.

2901 West Durango Street Phoenix, Arizona 85009 Phone: 602-506-4760 Fax: 602-506-5969

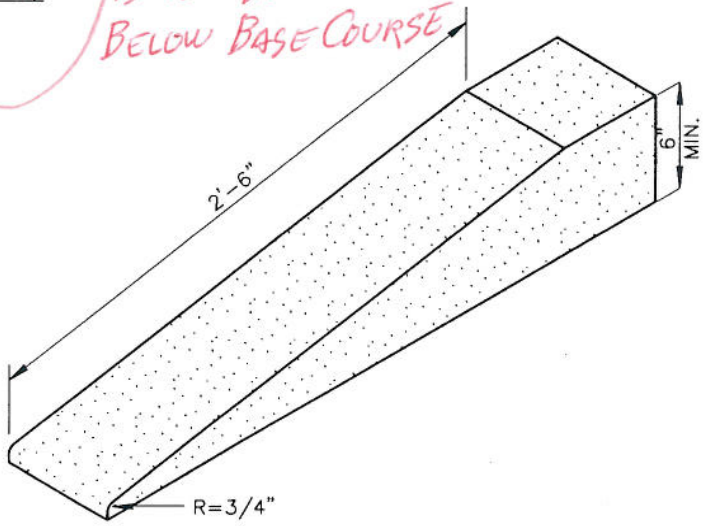


TYPE 'A'

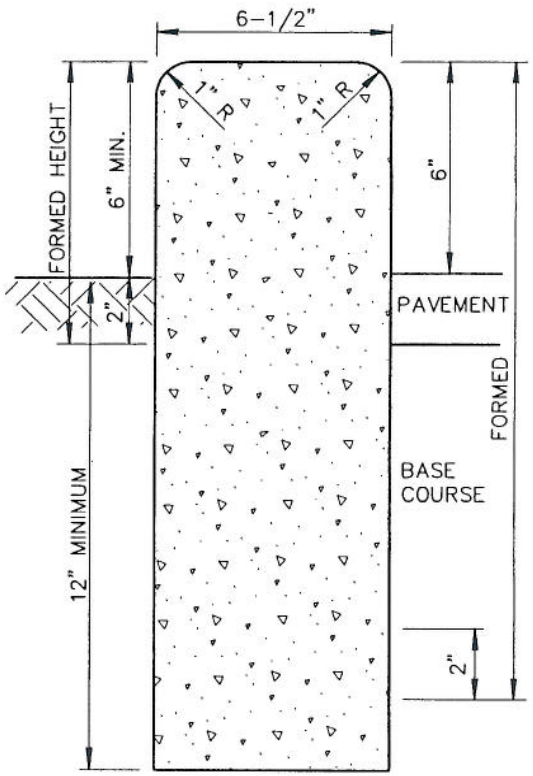
NOTES:

1. ALL VERTICAL SURFACES TO BE FORMED.
2. VERTICAL SURFACES DOWN FROM 2" BELOW UNDISTURBED SOIL MAY BE PLACED AGAINST NEAT CUT IF APPROVED BY THE ENGINEER AND CONCRETE WILL NOT EXTEND MORE THAN 1" BEYOND THEORETICAL FACE.
3. ALL EXPOSED SURFACES TO BE STRIPPED GREEN AND TROWEL FINISHED.
4. CONCRETE CURBS CONFORM TO SECT. 340.
5. MAXIMUM SPACING OF CONTRACTION JOINTS IS 10'
6. CONCRETE TO BE CLASS 'B' PER SECT. 725.

FORMED SURFACE IS TO EXTEND 2" BELOW BASE COURSE



TYPICAL CURB TERMINATION



TYPE 'B'

DETAIL NO.			REVISED	DETAIL NO.
222	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	SINGLE CURB - TYPES A, B AND TERMINATION	01-03-2002	222

CASE 07- 01 B
2/7/2007

Mesa proposes to make this change Case # 07-01C

In the event the Engineer finds the materials or the finished product in which the materials are used not in conformity with the plans and specifications, but that reasonably acceptable work has been produced, he shall then make a determination if the work shall be accepted and remain in place. In this event, the Engineer will document the basis of acceptance by contract modification which will provide for an appropriate adjustment in the contract price for such work or materials as he deems necessary to conform to his determination based on engineering judgement.

In the event the Engineer finds the materials or the finished product in which the materials are used or the work performed are not in conformity with the plans and specifications and have resulted in an inferior or unsatisfactory product, the work or materials shall be removed and replaced or otherwise corrected by the Contractor at no additional cost to the Contracting Agency.

In all instances wherein the items and/or specifications require installation or construction in accordance with either manufacturers' or suppliers' recommendations and/or instructions, said recommendations and/or instructions shall be submitted with the applicable portion clearly marked for approval prior to the commencement of work on that item or portions of the contract.

105.4 COORDINATION OF PLANS AND SPECIFICATIONS:

The Contractor shall take no advantage of any apparent error or omission in the plans or specifications. In the event the Contractor discovers such an error or omission, he shall immediately notify the Engineer. The Engineer will then make such corrections and interpretations as may be deemed necessary for fulfilling the intent of the plans and specifications.

105.5 COOPERATION OF CONTRACTOR: "work site" The word "site" is missing

The Contractor will be supplied with a ~~minimum~~ of seven sets of approved plans and special provisions, one set of which the Contractor shall keep available on the / at all times.

The Contractor shall give the work the constant attention necessary to facilitate the progress thereof, and shall cooperate with the Engineer, his inspectors, and other Contractors in every way possible.

The Contractor shall at all times be present at the work in person or represented by a competent superintendent. The superintendent shall be authorized to receive and fulfill instructions from the Engineer and who shall supervise and direct the work. No less than fourteen days prior to the scheduled/planned Notice to Proceed, the Contractor shall submit to the Engineer for review and approval, the name and qualifications of the proposed superintendent. When the superintendent is approved, he shall not be changed by the Contractor without written approval of the Engineer. Instructions and information given by the Engineer to the Contractor's superintendent shall be considered as having been given to the Contractor.

(A) All phases of the project such as concrete work, pipe work, etc., shall be under the direct supervision of a foreman or his designated representative on the site who shall have authority to accept instructions, with respect to that particular phase of the project, and take action required to properly carry out the work.

(B) In the event of noncompliance with the above, the Engineer may require the Contractor to stop work on that part of the project until the required supervision is present.

The Contractor shall file with the Engineer, the names, addresses, and telephone numbers of representatives who can be contacted, at any time, in case of emergency. These representatives must be fully authorized and equipped to correct unsafe or excessively inconvenient conditions on short notice.

Emergencies may arise during the progress of the work which may require special effort or require extra shifts of men to continue the work beyond normal working hours. The Contractor shall be prepared in case of such emergencies from whatever cause, to do all necessary work promptly.

105.6 COOPERATION WITH UTILITIES:

The Contracting Agency will notify all utility companies, all pipe line owners, or other parties affected, and endeavor to have all necessary adjustments of the public or private utility fixtures, pipe lines, and other appurtenances within or adjacent to the limits of construction, made as soon as practicable.

The Contractor shall comply with the requirements of ARS-40-360.21 through 40-360.29 (one call system, Blue Stake) in notification to the interested utility owners prior to start of construction. The Contractor shall resolve all problems with the utility owners concerned.

CASE 07-02

ASPHALT CONCRETE
02/01/07

710.1 GENERAL:

Asphalt concrete shall be a mixture of asphalt cement and mineral aggregates. Mineral admixture, mineral filler and anti-stripping agent shall be included in the mixture when required by the mix design or by the Engineer. All materials shall be proportioned by weight in a central mix plant in the proportions required by the mix design to provide a homogeneous and workable mass.

The designations for asphalt concrete mixes shall be based on the nominal maximum aggregate size of the mix. The applicable mix designations are 3/8 inch, 1/2 inch, 3/4 inch, and Base Mix. The minimum lift thickness for Marshall Mixes shall be 2½ times the nominal maximum aggregate size; while the minimum lift thickness for Gyratory mixes shall be 3½ times the nominal maximum aggregate size.

Each mix can be designed using Marshall or Gyratory compaction methods. Marshall Mixes may be used for low or high traffic conditions, while Gyratory mixes shall be used for high traffic conditions. Low traffic conditions are conditions where the asphalt mix will be subject to low volume and low weight vehicle usage. Examples of this condition are residential streets, most parking lots, and residential minor collector streets. High traffic conditions are conditions where the asphalt mix will be subject to high volume and/or heavy weight vehicle usage as found on major collector, arterial, and commercial streets. Street classifications (i.e. minor collector and major collector) shall be determined by the specifying agency.

710.2 MATERIALS:

710.2.1 Asphalt Cement: The asphalt cement specified in this section has been developed for use in desert climate conditions. Should it be utilized in other climates, consideration should be given to adjustments in the asphalt selection. The asphalt cement shall be performance grade asphalt conforming to the requirements of Section 711 for PG 70-10, unless approved by the Engineer or otherwise specified in the plans or special provisions.

710.2.2 Aggregate: Coarse and fine aggregates shall conform to the applicable requirements of this section. Coarse mineral aggregate shall consist of crushed gravel, crushed rock, or other approved inert material with similar characteristics, or a combination

This paragraph remains the same as in the existing MAG document.

Table has been removed due to misapplication of target lift thickness. Lift thickness info has been moved to second paragraph.

This paragraph simplifies the identification/designation of the permissible asphalt mixes.

These minimum lift thicknesses will bring us into line with national experience (NAPA, NCAT, etc.). This will also facilitate improved compaction which results in increased longevity/durability.

This is similar to existing document, but expanded to address applicable mix design method.

This paragraph remains similar to original document, but provides the Engineer the opportunity to select an asphalt binder grade appropriate for the expected environmental and traffic loading conditions.

This remains similar to original, but brings all aggregate requirements within this specification section.

thereof, conforming to the requirements of these specifications.

Coarse aggregate for hot mix asphalt is material retained above the Number 4 sieve and fine aggregate is material passing the Number 4 sieve. Aggregates shall be relatively free of deleterious materials, clay balls, and adhering films or other material that prevent thorough coating with the asphalt cement. Mineral aggregate shall conform to the following requirements when tested in accordance with the applicable test methods.

This remains similar to original document, but establishes a new size delineating coarse aggregate from fine aggregate. This was done to conform to standard industry practice in the western U.S.

This also identifies additional aggregate properties requirements (not present in existing MAG).

TABLE 710-1
COARSE/FINE AGGREGATE REQUIREMENTS

Characteristics	Test Method	Low Traffic	High Traffic
Fractured Faces, % (Coarse Aggregate Only)	**Arizona 212**	75, 1 or more	85, 1 or more 80, 2 or more
Uncompacted Voids, % Min.	AASHTO T-304, Method A	42	45
Flat & Elongated Pieces, % 5:1 Ratio	ASTM D-4791	10.0 Max.	10.0 Max.
Sand Equivalent, %	AASHTO T-176	50 Min.	50 Min.
Plasticity Index	AASHTO T-90	Non-plastic	Non-plastic
L.A. Abrasion, %Loss	AASHTO T-96	9 max. @ 100 Rev. 40 max. @ 500 Rev.	9 max. @ 100 Rev. 40 max. @ 500 Rev.
Combined Bulk Specific Gravity	Asphalt Institute MS-2	2.35 – 2.85	2.35 – 2.85
Combined Water Absorption	Asphalt Institute MS-2	0 – 2.5%	0 – 2.5%

As per EVAC Mix Design Criteria item k: fractured face.

Standard test method protocol to be established, for aggregate properties and mix properties.

Set SE requirement for all mixes to a minimum of 50

LA Abrasion test to be performed per EVAC requirements annually

Established specific abrasion requirements for asphalt mixes.

Added specific gravity and water absorption requirements to preclude use of inferior, porous aggregates.

Tests on aggregates used in hot mix asphalt outlined above, shall be performed on materials furnished for mix design purposes and composited to the mix design gradation.

Blend sand (naturally occurring or crushed fines) shall be clean, hard and sound material, which will readily accept asphalt coating. The blend sand properties shall be such that, when it is mixed with

Eliminated maximum limit on natural sand, but require combined material to satisfy all aggregate properties.

the other mineral aggregates, the combined product shall meet the requirements of table 710-1.

710.2.3 Mineral Filler, Mineral Admixture and Anti-Stripping Agent:

Mineral filler used in hot mix asphalt shall conform to the requirements of AASHTO M-17. The amount of mineral filler shall be determined by the mix design.

Mineral admixture used in hot mix asphalt shall be dry hydrated lime, conforming to the requirements of ASTM C-1097, or Portland cement conforming to MAG Section 725 Type II or Type IP. The amount of hydrated lime or Portland cement used shall be determined by the mix design. The minimum cement content will be 1.0 percent, while the minimum hydrated lime content will be 0.75 percent, both by weight of the total aggregate.

Same as in current MAG.

Correct lime designation and present less confusing description of admixture use.

Eliminate reference to liquid anti-stripping agents due to technical and/or safety concerns.

710.3 MIX DESIGN REQUIREMENTS:

710.3.1 General: The mix design of hot mix asphalt for the project shall be prepared by a laboratory that is accredited through the AASHTO Accreditation Program in Hot Mix Asphalt Aggregates and Hot Mix Asphalt. The laboratory shall be under the direct supervision of a Civil Engineer, registered by the State of Arizona, with a minimum of five years experience in the development of asphalt concrete mix designs. The date of the design shall not be older than two years from the date of submittal, unless supportive documentation is provided and approved by the Engineer.

The mix design report shall include the following elements as a minimum:

1. The name and address of the testing organization and the person responsible for the mix design testing.
2. The mix plant identification and/or location as well as the supplier or producer name.
3. A description of all products that are incorporated in the asphalt concrete along with the sources of all products, including mineral admixtures and asphalt cement, and their method of introduction.
4. The supplier and grade of asphalt cement, the source and type of mineral admixture, and the percentage of asphalt cement and mineral admixture to be used.
5. The results of all testing, determinations, etc., such as: specific gravity and gradation of each

These requirements are more detailed and inclusive than previously specified. They relate to identifying potential performance.

component, water absorption, sand equivalent, loss on abrasion, fractured coarse aggregate particles, immersion compression results (Index of Retained Strength, wet and dry strengths), Marshall stability and flow, asphalt absorption, percent air voids, voids in mineral aggregate, and bulk density. Historical abrasion values may be supplied on existing sources. The submittal should include a plot of the gradation on the Federal Highway Administration's 0.45 Power Gradation Chart, plots of all compaction curves and the results of moisture sensitivity testing.

6. Viscosity-Temperature curve along with the laboratory mixing and compaction temperature ranges.
7. A specific recommendation for design asphalt content and any limiting conditions that may be associated with the use of the design, such as minimum percentages of crushed or washed fine aggregate.
8. The suppliers product code, the laboratory Engineer's seal (signed and dated), and the date the design was performed.

The mix design shall be submitted to the Agency by the Contractor/Supplier for which it was developed as part of his project submittals. Once the mix design has been approved by the agency and the mixing plant selected, the Contractor and/or his supplier shall not change plants nor utilize additional mixing plants unless changed to another currently approved source.

Similar to existing MAG Specification with clarification.

Any changes in the plant operation, the producer's pit, the asphalt cement, including modifiers, or any other item that will cause an adjustment in the mix, shall be justification for a new mix design to be submitted.

This paragraph remains unchanged from the current MAG.

710.3.2 Mix Design Criteria: The mix design shall be performed by one of two methods, Marshall Mix Design or Gyratory Mix Design. The method shall be specified on the plans, special provisions, or by the Engineer. A minimum of 4 points will be used to establish the mix design results. The oven aging period for both Marshall and Gyratory mix design samples shall be 2 hours.

This paragraph remains essentially unchanged from the current MAG.

710.3.2.1 Marshall Mix Design: Marshall Mix Designs shall be performed in accordance with the requirements of the current edition of the Asphalt Institute Manual, MS-2 "*Mix Design Methods for Asphalt Concrete*". The mix shall utilize a compactive effort described of 75 blows per side of specimen. The mix shall comply with the criteria in Table 710-2.

TABLE 710-2
MARSHALL MIX DESIGN CRITERIA

Criteria	Requirements			Designated Test Method
	3/8" Mix	1/2" Mix	3/4" & Base Mix	
1. Voids in Mineral Aggregate: %, min	15.0	14.0	12.0	AI MS-2
2. Effective Voids: %, Range	4.0 ± 0.2	4.0 ± 0.2	4.0 ± 0.2	AI MS-2
3. Absorbed Asphalt: %, Range	0 - 1.0	0 - 1.0	0 - 1.0	AI MS-2
4. Tensile Strength Ratio: %, Min.	60	60	60	AASHTO T283
5. Dry Tensile Strength: psi, Minimum	100	100	100	AASHTO T283
6. Stability: pounds, Minimum	2,000	2,500	2,500	AASHTO T245
7. Flow: 0.01-inch, Range	8 - 16	8 - 16	8 - 16	AASHTO T245
8. Mineral Aggregate Grading Limits				AASHTO T27

Sieve Size	Percent Passing with Admix			
	3/8 inch Mix	1/2 inch Mix	3/4 inch Mix	Base Mix
1-1/4 inch				100
1 inch			100	90-100
3/4 inch		100	90 - 100	85-95
1/2 inch	100	85 - 100	---	---
3/8 inch	90-100	62 - 85	62 - 77	57-72
No. 8	45-60	40 – 50	35 – 47	33-43
No. 40	10-22	10 - 20	10 – 20	9-18
No. 200	2.0 – 10.0	2.0 – 10.0	2.0 – 8.0	1.0 – 7.0

The ratio of the mix design composite gradation target for the No. 200 sieve, including admixture, to the effective asphalt content shall be within the range 0.6 to 1.4.

Standard English SI units will be used in place of Metric Units
Increased the Marshall stability requirement for all mixes
Added absorbed asphalt requirement.
Eliminate restricted zone per NCAT Research
Modified gradations for the Marshall Mix Designs
Eliminate grading bands with no admix,

710.3.2.2 Gyratory Mix Design: Gyratory Mix Designs shall be performed in accordance with the requirements of the current edition of the Asphalt Institute Manual SP-2. Mix design laboratory compacted test specimens shall be prepared using a gyratory compactor in accordance with AASHTO T 312.

The mix design shall be formulated in a manner described for Volumetric mix designs in the current edition of the Asphalt Institute Manual SP-2, except the number of trial blend gradations necessary will be determined by the mix design laboratory. Duplicate gyratory samples shall be prepared at a minimum of

four (4) binder contents to select the recommended binder content. The completed mix design shall meet all the mineral aggregate and mix design criteria specified herein.

For purposes of design, the number of gyrations shall be 8 for Nini, 100 for Ndes, and 160 for Nmax. The corrected density of the specimens shall be less than 89.0 percent of maximum theoretical density at 8 gyrations. The corrected density of the specimens shall be less than 98.0 percent of maximum theoretical density at 160 gyrations.

The mix shall comply with the criteria in Table 710-3.

TABLE 710-3
GYRATORY MIX DESIGN CRITERIA

Criteria	Requirements			Designated Test Method
	3/8" Mix	1/2" Mix	3/4" Mix	
1. Voids in Mineral Aggregate: %, Min.	15.0	14.0	13.0	AI SP-2
2. Effective Voids: %, Range	4.5 ± 0.2	4.5 ± 0.2	4.5 ± 0.2	AI SP-2
3. Absorbed Asphalt: %, Range	0 - 1.0	0 - 1.0	0 - 1.0	AI SP-2
4. Tensile Strength Ratio: %, Min.	70	70	70	AASHTO T283
5. Dry Tensile Strength: psi, Minimum	75	75	75	AASHTO T283
6. Mineral Aggregate Grading Limits				AASHTO T27

Sieve Size	Percent Passing with Admix		
	3/8 inch Mix	1/2 inch Mix	3/4 inch Mix
1 inch			100
3/4 inch		100	90-100
1/2 inch	100	90-100	43-89
3/8 inch	90-100	53-89	-
No. 8	32-47	29-40	24-36
No. 40	2-24	3-20	3-18
No. 200	2.0-8.0	2.0-7.5	2.0-6.5

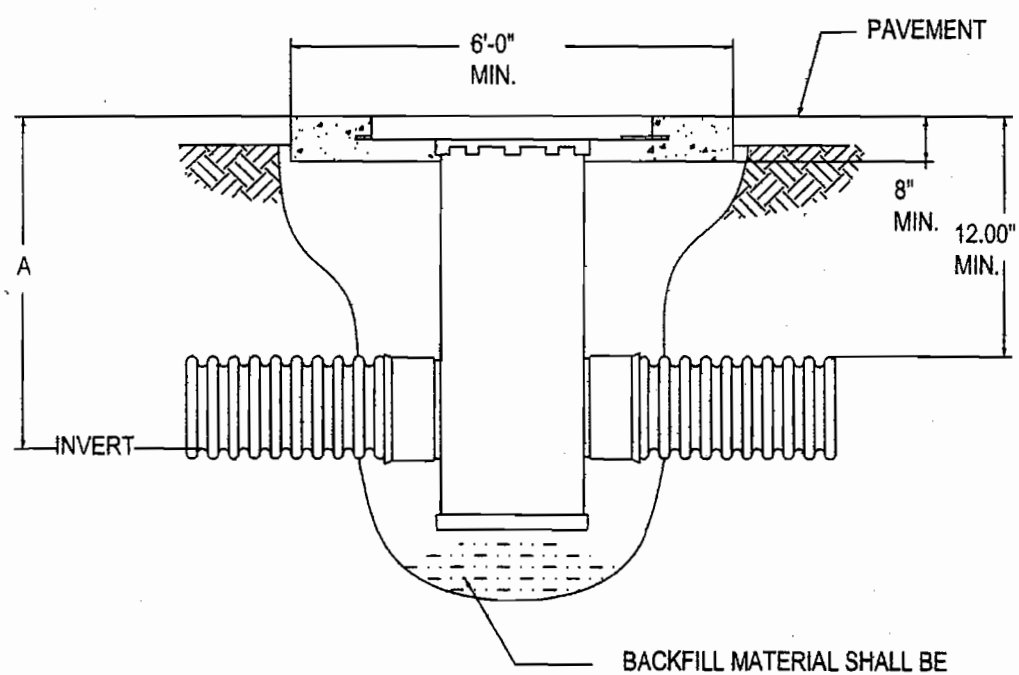
The ratio of the mix design composite gradation target for the No. 200 sieve, including admixture, to the effective asphalt content shall be within the range 0.6 to 1.4.

710.3.2.3 Moisture Sensitivity Testing: Moisture sensitivity testing will be performed in accordance with AASHTO Test Method T283 for both Marshall and Gyratory mix designs. The minimum required Tensile Strength Ratio is indicated in the tables above.

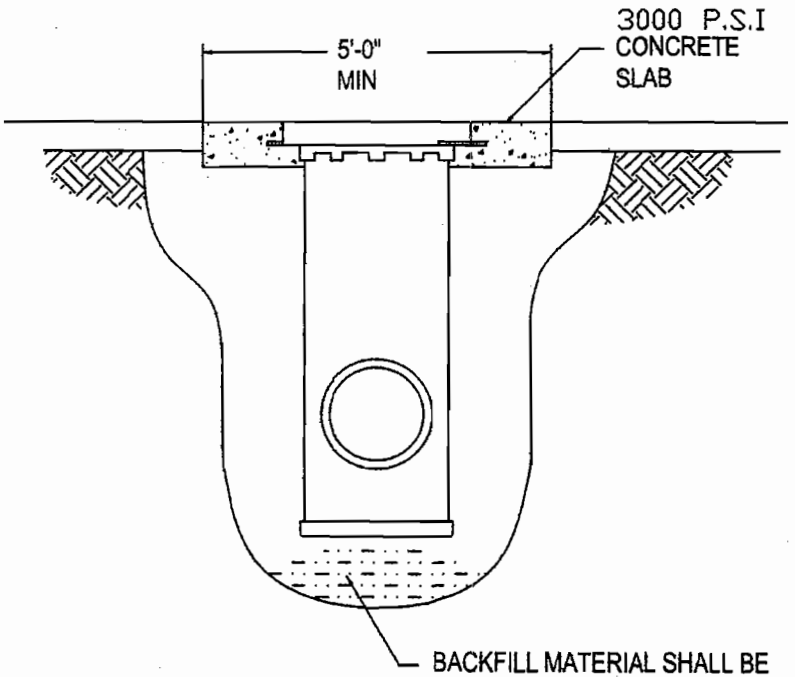
Mixture air void level adjusted to accommodate heavier traffic loading situations.
Added absorbed asphalt requirement
Eliminate restricted zone per NCAT Research
Modified gradations for the Gyratory Mix Designs
Eliminate grading bands with no admix,

Consistent use of specifications

Acceptance criteria (710.4 – 710.6) have been moved to 321.10.



BACKFILL MATERIAL SHALL BE CRUSHED STONE OR GRAVEL MATERIAL MEETING CLASS 1 OR 2 AS SPECIFIED IN ASTM D2321.
BACKFILL MATERIAL SHALL BE PLACED UNIFORMLY IN 12" LIFTS AND COMPACTED TO A MINUMUM OF 95% STANDARD PROCTOR DENSITY.



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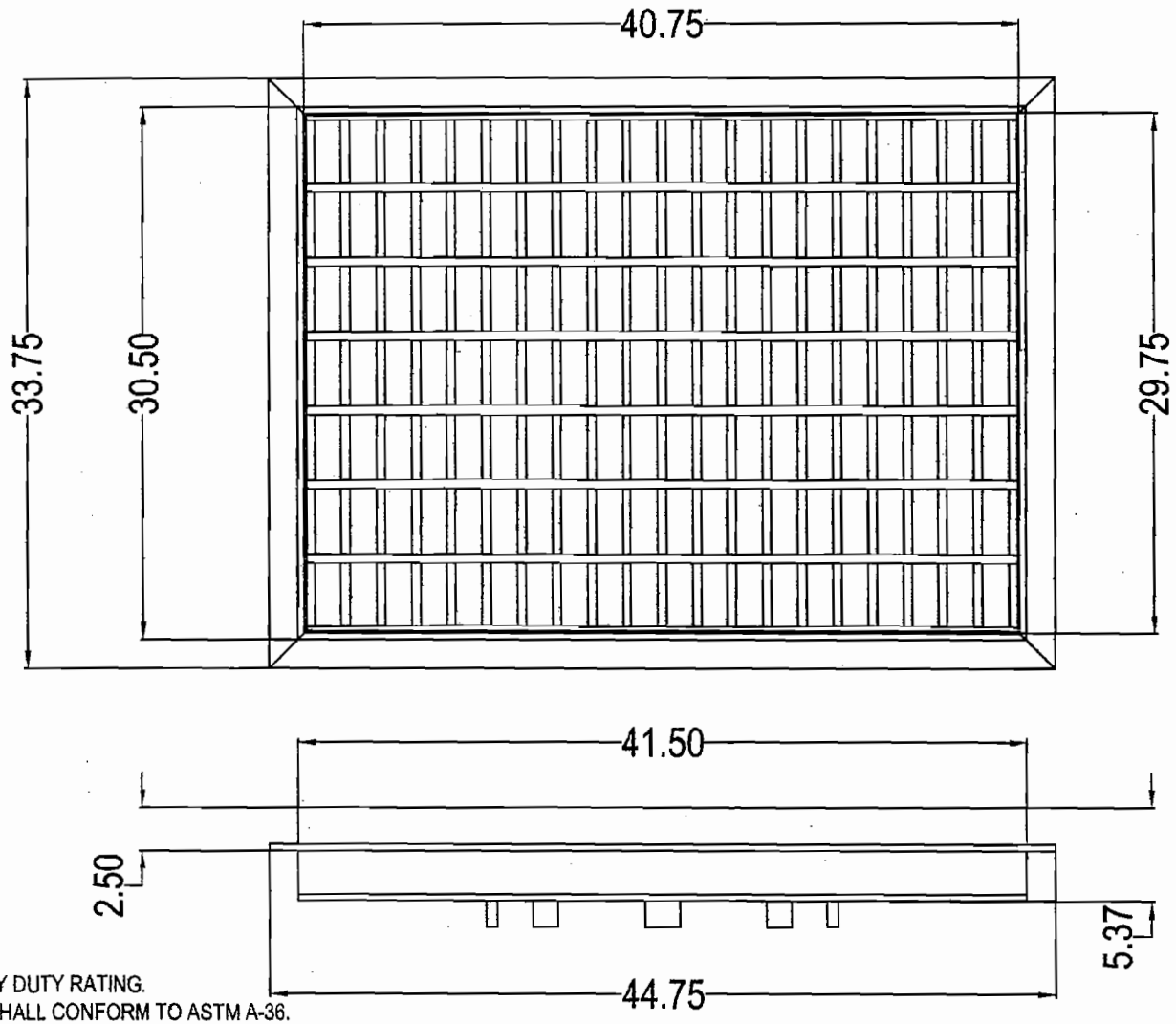
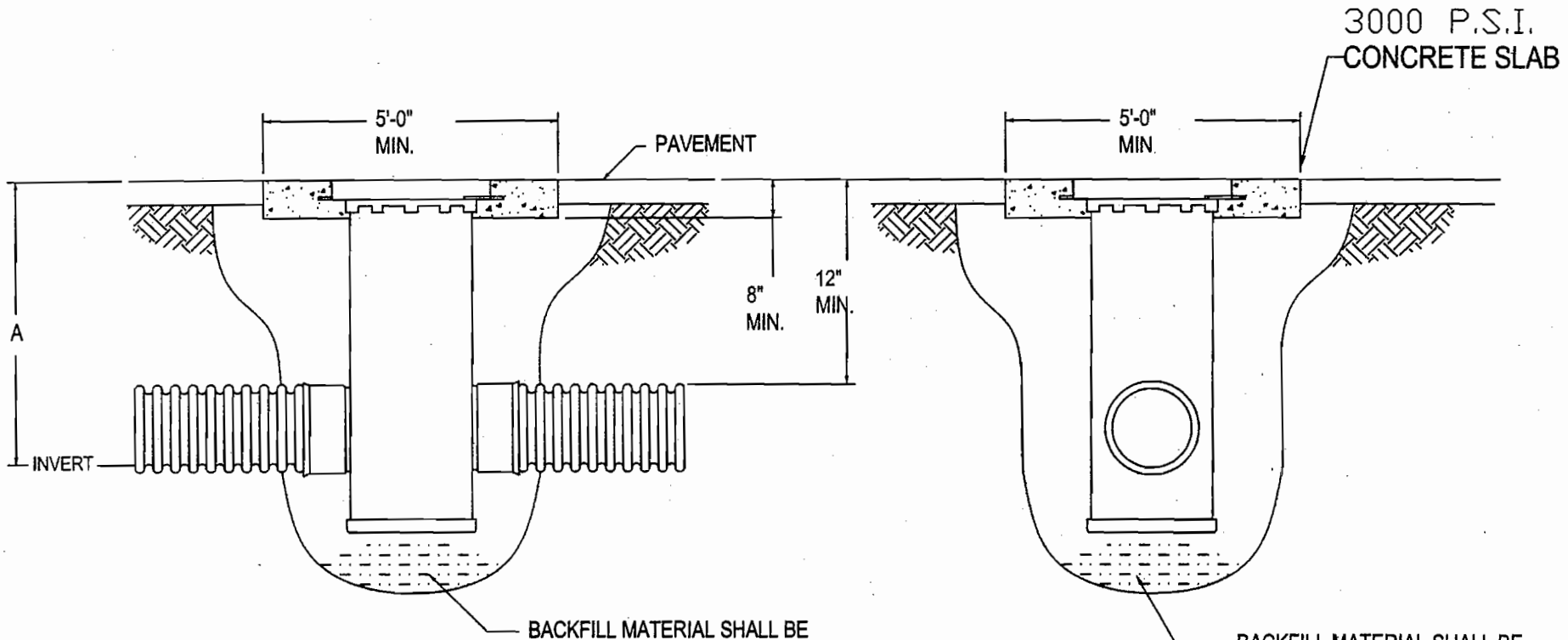
DETAIL NO.			REVISED	DETAIL NO.
535-2		CATCH BASIN 'J '		535-2

CASE 07-03

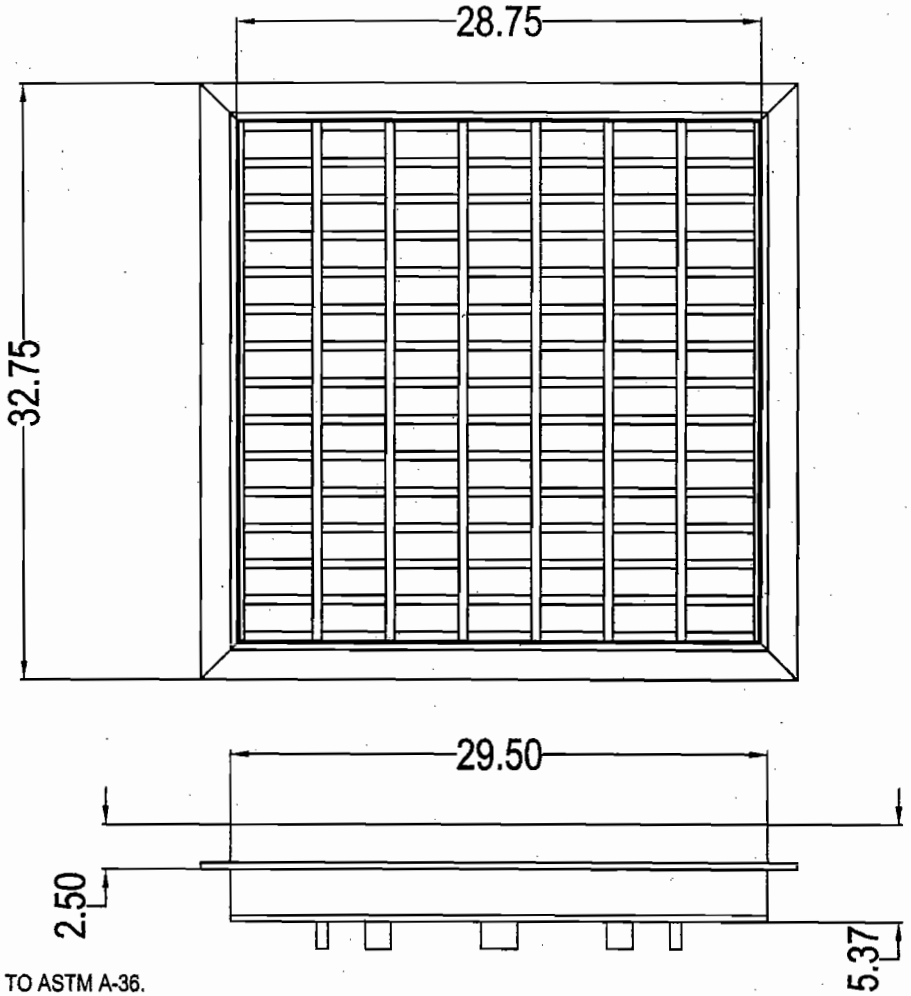


GRATE HAS H-25 HEAVY DUTY RATING.
QUALITY: MATERIALS SHALL CONFORM TO ASTM A-36.
MATERIAL: STEEL
PAINT: FRAME & GRATE IS FURNISHED WITH A BLACK PAINT.
LOCKING DEVICE AVAILABLE UPON REQUEST.
APPROX. DRAIN AREA = 761.18 SQ IN.

DETAIL NO. 535-3		GRATE FOR CATCH BASIN 'J '	REVISED	DETAIL NO. 535-3

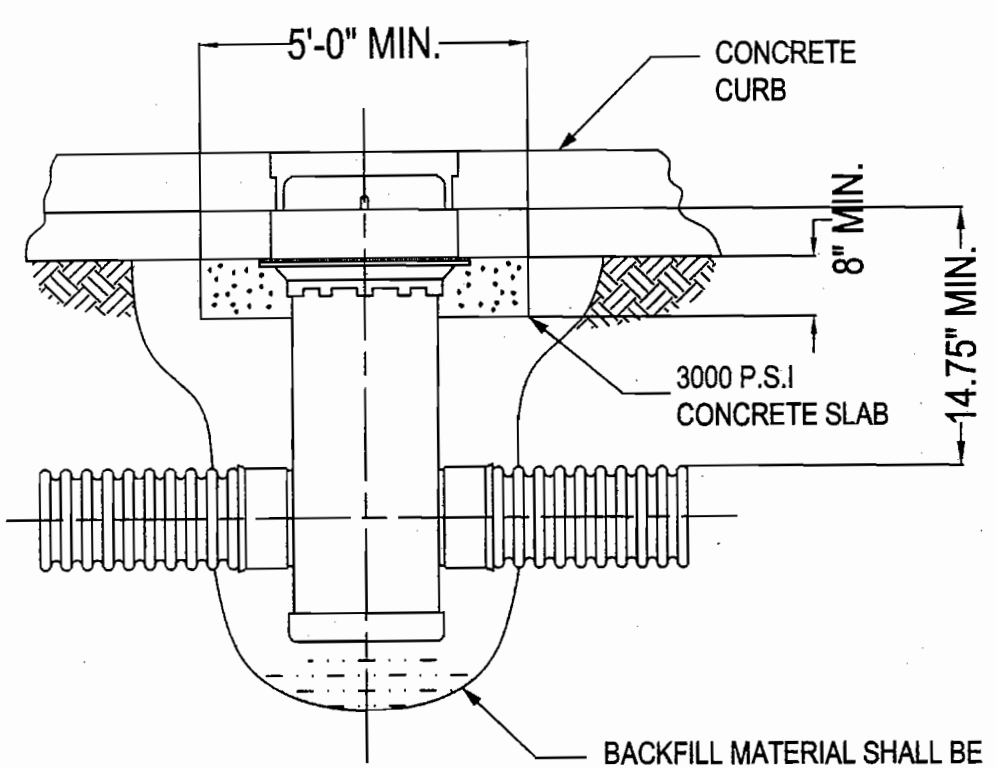


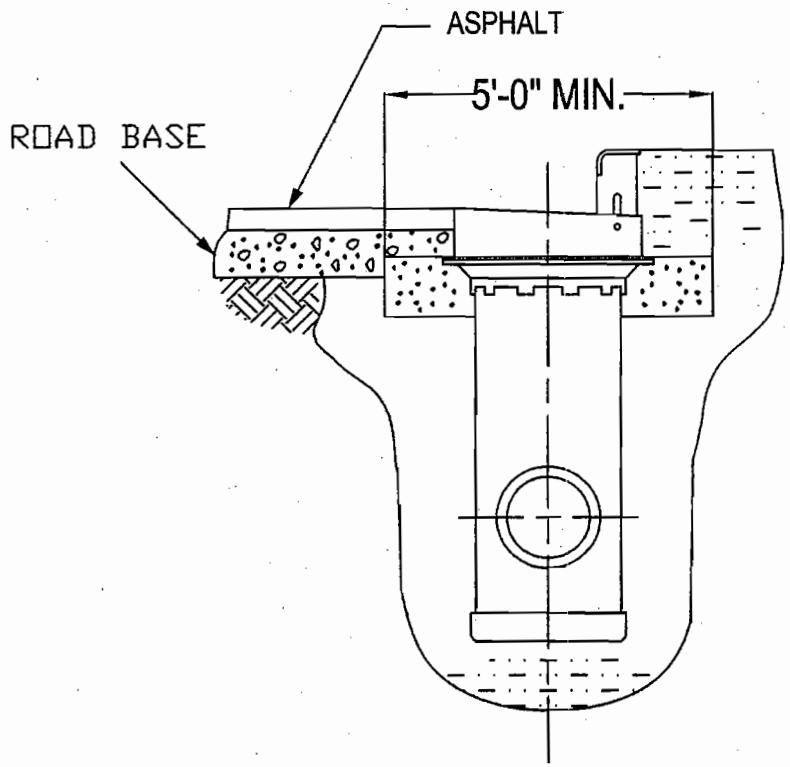
DETAIL NO. 537-2	CATCH BASIN - TYPE 'I'	REVISED	DETAIL NO. 537-2



GRATE HAS H-25 HEAVY DUTY RATING.
QUALITY: MATERIALS SHALL CONFORM TO ASTM A-36.
MATERIAL: STEEL
PAINT: FRAME & GRATE IS FURNISHED WITH A BLACK PAINT.
LOCKING DEVICE AVAILABLE UPON REQUEST.
APROX. DRAIN AREA = 551.25 SQ IN.

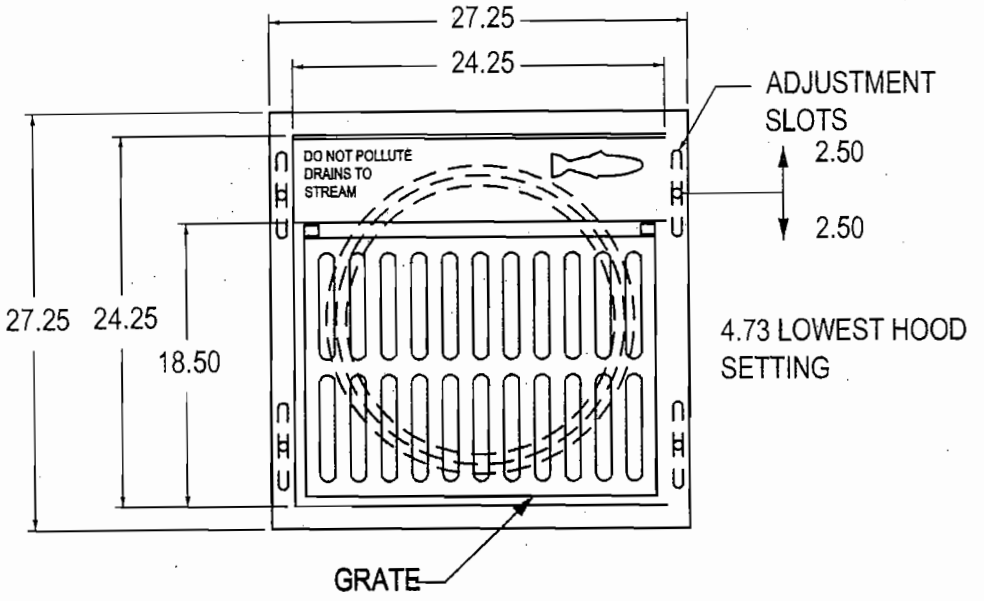
DETAIL NO.		GRATE FOR CATCH BASIN TYPE 'I'	REVISED	DETAIL NO.
539-2				539-2

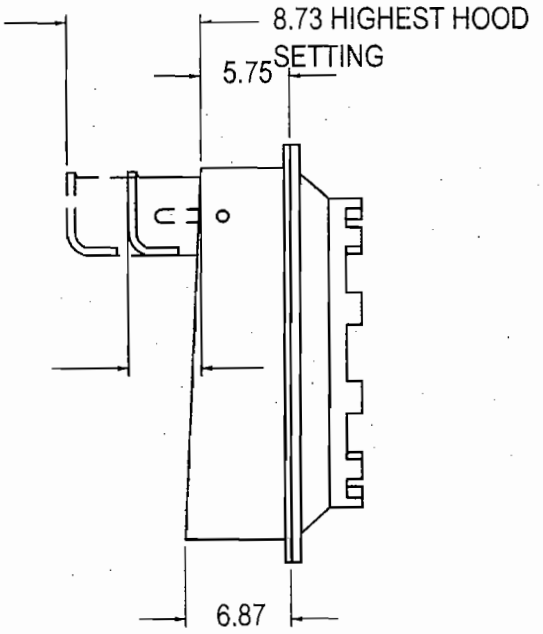


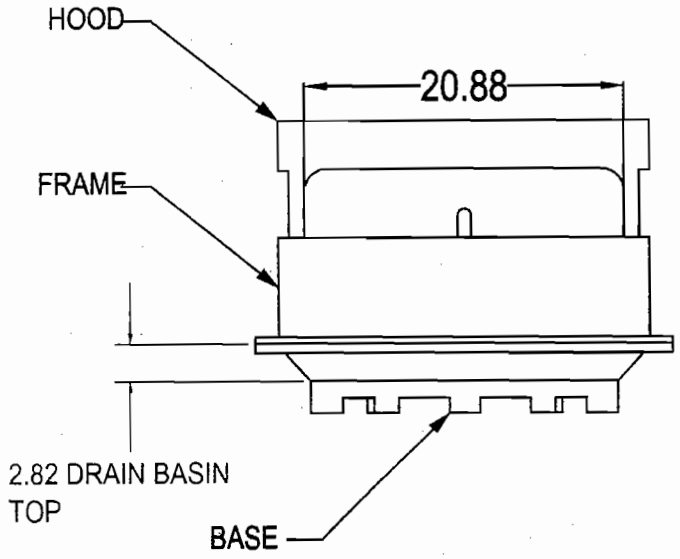


BACKFILL MATERIAL SHALL BE CRUSHED STONE OR GRAVEL MATERIAL MEETING CLASS 1 OR 2 AS SPECIFIED IN ASTM D2321 BACKFILL MATERIAL SHALL BE PLACED UNIFORMLY IN 12" LIFTS AND COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR DENSITY.

ETAIL NO. 542-1	2 ' X 2 ' CURB INLET INSTALLATION DETAIL	REVISED	DETAIL NO. 542-1



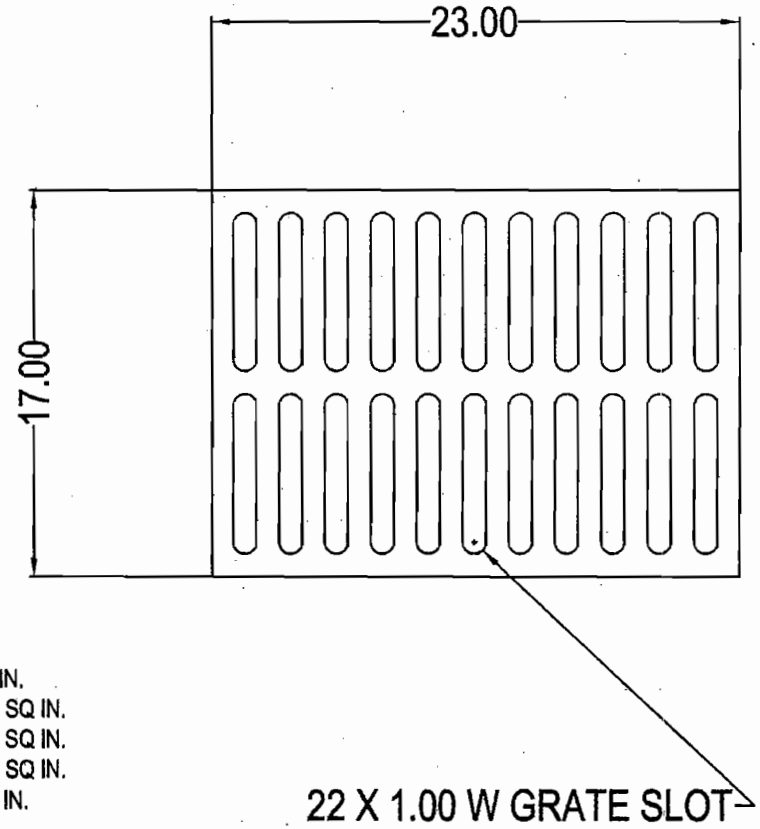




1. CURB INLET GRATE FITS DRAIN BASIN SIZES: 12" - 30"
2. MATERIAL: DUCTILE IRON H-25 RATED GRATE CONFORMING TO ASTM A536 GRADE 70-50-05
3. ALL CASTINGS ARE FURNISHED WITH BLACK PAINT AND ZINC PLATED FASTENERS
4. LOCKING DEVICE AVAILABLE UPON REQUEST
5. SLOPE OF GRATE SURFACE IS 2.88%
6. CURB INLET FRAME INSIDE VOLUME IS APPROX 1.76 CU FT

DETAIL NO. 542-2		2 ' X 2 ' CURB INLET DETAIL	REVISED	DETAIL NO. 542-2

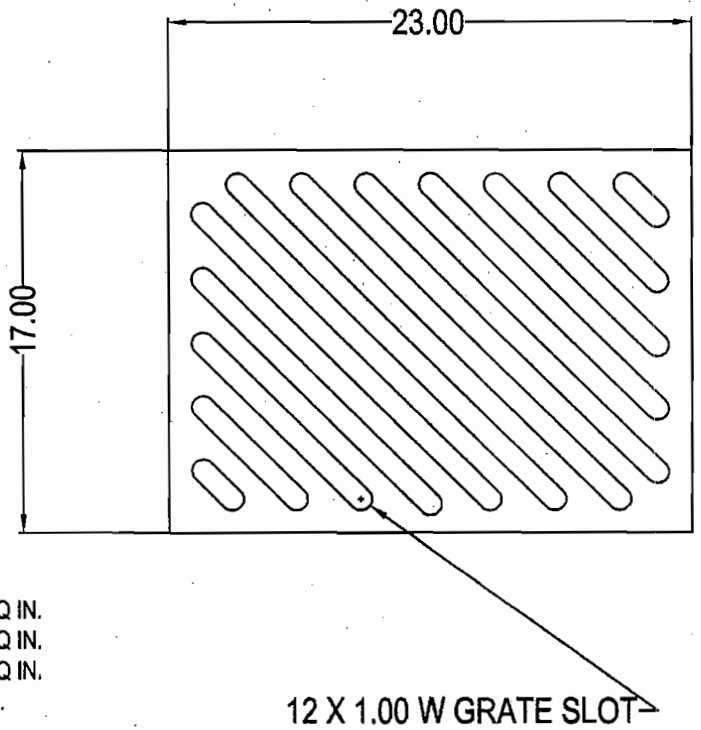
GRATE HAS H-25 HEAVY DUTY RATING.
QUALITY: MATERIALS SHALL CONFORM TO ASTM A536 GRADE 70-50-05.
MATERIAL: DUCTILE IRON
PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT.
LOCKING DEVICE AVAILABLE UPON REQUEST.



APPROX. DRAIN AREA OF GRATE = 146.18 SQ IN.
APPROX DRAIN AREA OF GRATE & HOOD @ LOWEST SETTING = 179.58 SQ IN.
APPROX DRAIN AREA OF GRATE & HOOD @ LOWEST + 1" SETTING = 200.46 SQ IN.
APPROX DRAIN AREA OF GRATE & HOOD @ LOWEST + 2" SETTING = 221.33 SQ IN.
APPROX DRAIN AREA OF GRATE & HOOD @ LOWEST + 3" SETTING = 242.20 SQ IN.
APPROX DRAIN AREA OF GRATE & HOOD @ HIGHEST SETTING = 263.08 SQ IN.

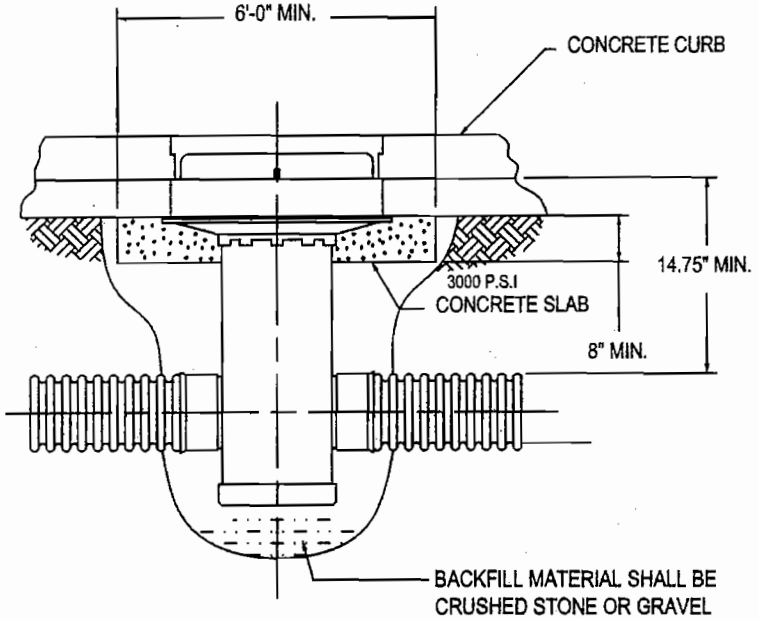
DETAIL NO.		2 ' X 2' STANDARD GRATE DETAIL	REVISED	DETAIL NO.
542-3				542-3

GRATE HAS H-25 HEAVY DUTY RATING.
QUALITY: MATERIALS SHALL CONFORM TO ASTM A536 GRADE 70-50-05.
MATERIAL: DUCTILE IRON
PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT.
LOCKING DEVICE AVAILABLE UPON REQUEST.

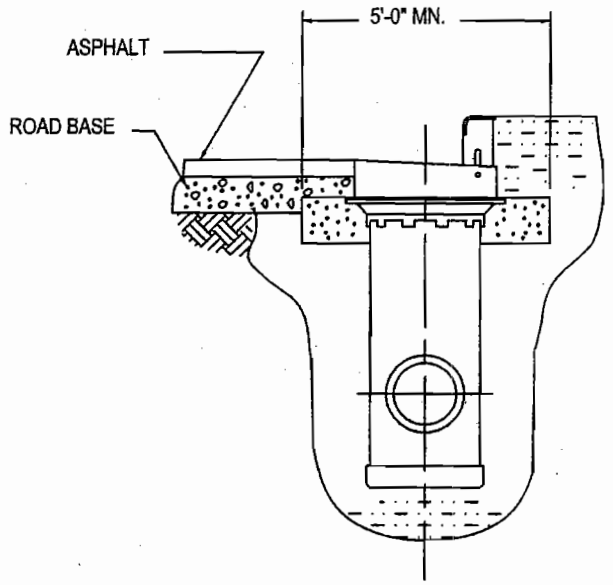


APPROX. DRAIN AREA OF GRATE = 146.70 SQ IN.
APPROX DRAIN AREA OF GRATE & HOOD @ LOWEST SETTING = 180.10 SQ IN.
APPROX DRAIN AREA OF GRATE & HOOD @ LOWEST + 1" SETTING = 200.98 SQ IN.
APPROX DRAIN AREA OF GRATE & HOOD @ LOWEST + 2" SETTING = 221.86 SQ IN.
APPROX DRAIN AREA OF GRATE & HOOD @ LOWEST + 3" SETTING = 242.74 SQ IN.
APPROX DRAIN AREA OF GRATE & HOOD @ HIGHEST SETTING = 263.62 SQ IN.

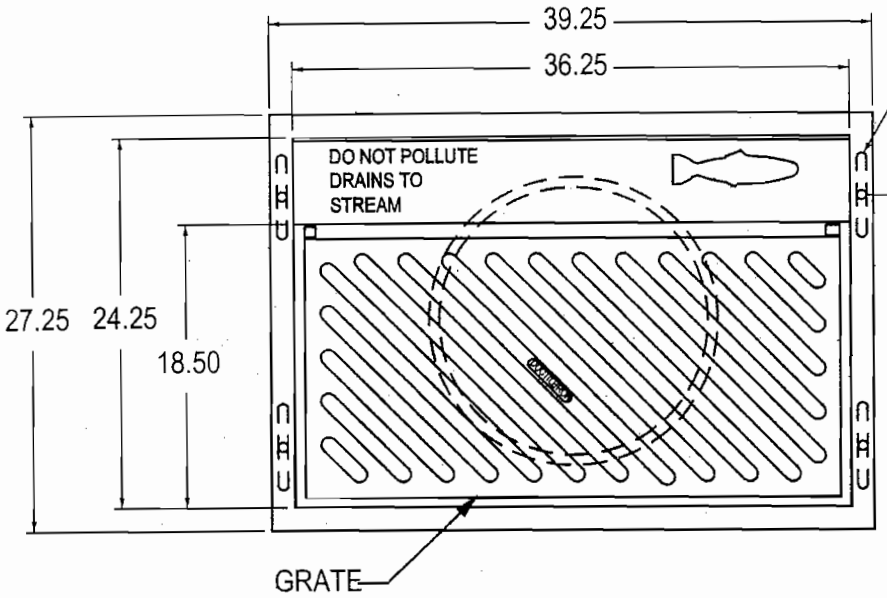
DETAIL NO. 542-4		2 ' X 2 ' DIAGONAL GRATE DETAIL	REVISED	DETAIL NO. 542-4

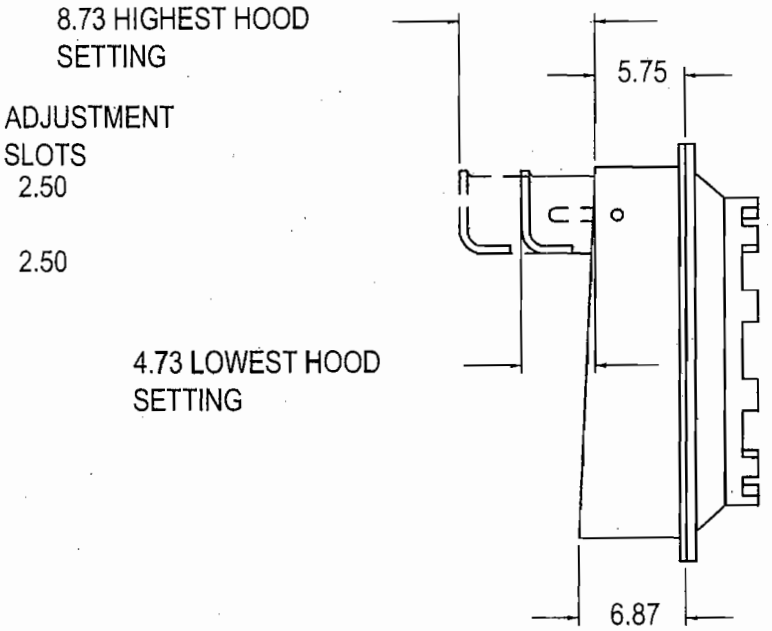


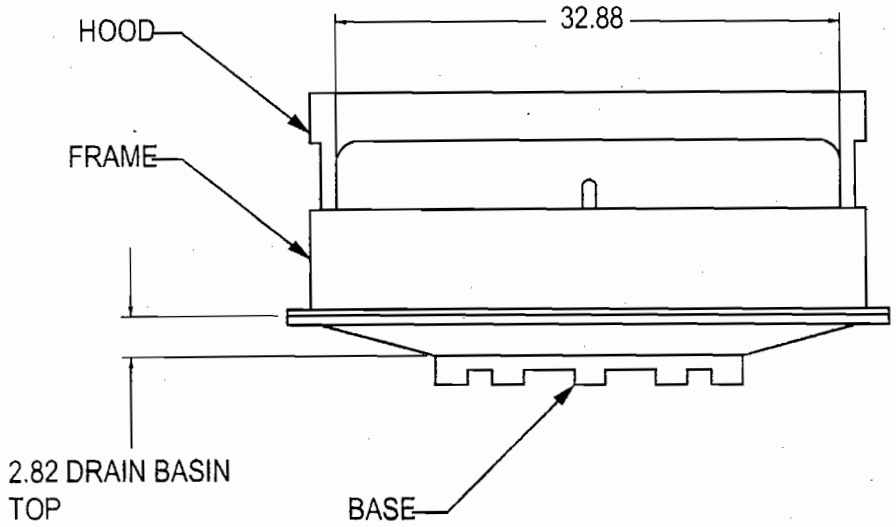
BACKFILL MATERIAL SHALL BE CRUSHED STONE OR GRAVEL MATERIAL MEETING CLASS 1 OR 2 AS SPECIFIED IN ASTM D2321 BACKFILL MATERIAL SHALL BE PLACED UNIFORMLY IN 12" LIFTS AND COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR DENSITY.



DETAIL NO.			REVISED	DETAIL NO.
543-1		2 ' X 3 ' CURB INLET INSTALLATION DETAIL		543-1





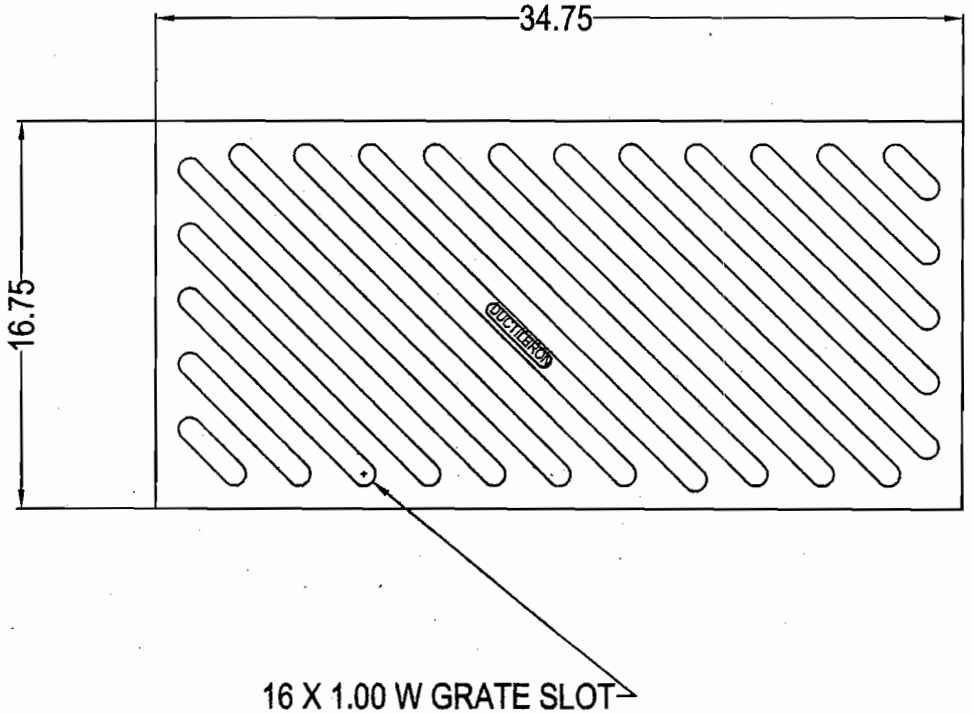


1. CURB INLET GRATE FITS DRAIN BASIN SIZES: 18" - 30"
2. MATERIAL: DUCTILE IRON H-25 RATED GRATE CONFORMING TO ASTM A536 GRADE 70-50-05
3. ALL CASTINGS ARE FURNISHED WITH BLACK PAINT AND ZINC PLATED FASTENERS
4. LOCKING DEVICE AVAILABLE UPON REQUEST
5. SLOPE OF GRATE SURFACE IS 2.88%
6. CURB INLET FRAME INSIDE VOLUME IS APPROX 2.73 CU FT

DETAIL NO. 543-2	2 ' X 3 ' CURB INLET DETAIL TYPE "A"	REVISED	DETAIL NO. 543-2

GRATE HAS H-25 HEAVY DUTY RATING.
QUALITY: MATERIALS SHALL CONFORM TO ASTM A536 GRADE 70-50-05.
MATERIAL: DUCTILE IRON
PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT.
LOCKING DEVICE AVAILABLE UPON REQUEST.

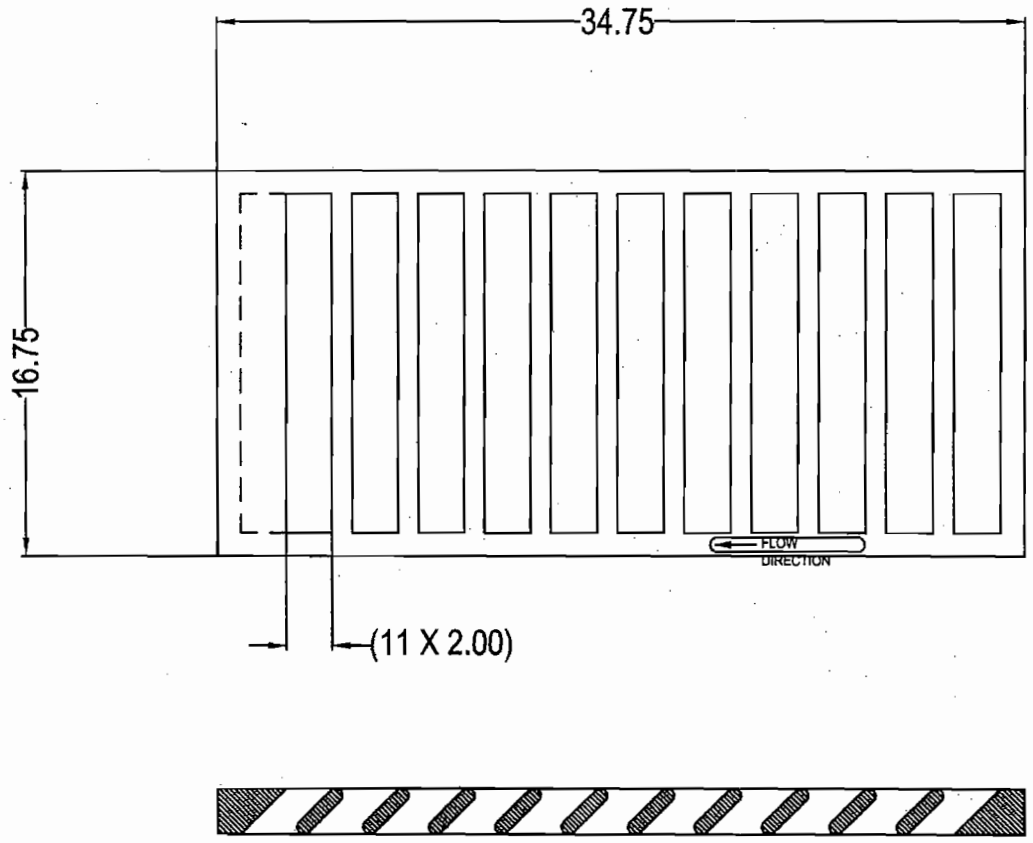
APPROX. DRAIN AREA OF GRATE = 232.87 SQ IN.
APPROX DRAIN AREA OF GRATE & HOOD @ LOWEST SETTING = 278.27 SQ IN.
APPROX DRAIN AREA OF GRATE & HOOD @ LOWEST + 1" SETTING = 311.15 SQ IN.
APPROX DRAIN AREA OF GRATE & HOOD @ LOWEST + 2" SETTING = 344.03 SQ IN.
APPROX DRAIN AREA OF GRATE & HOOD @ LOWEST + 3" SETTING = 376.91 SQ IN.
APPROX DRAIN AREA OF GRATE & HOOD @ HIGHEST SETTING = 409.79 SQ IN.



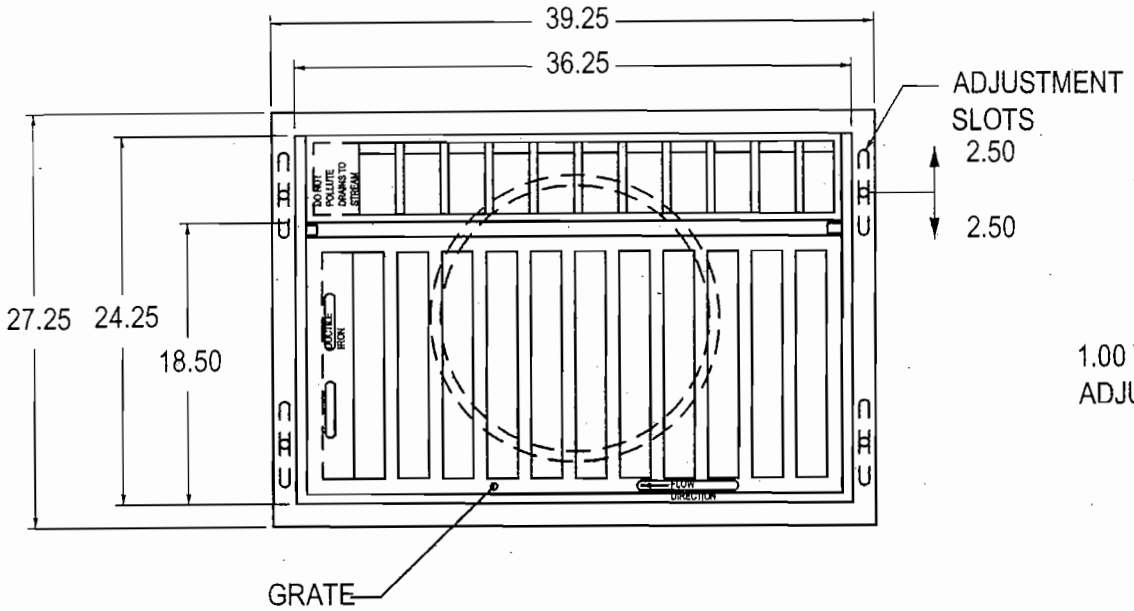
DETAIL NO.		2' X 3' CURB INLET DIAGONAL GRATE DETAIL	REVISED	DETAIL NO.
543-3				543-3

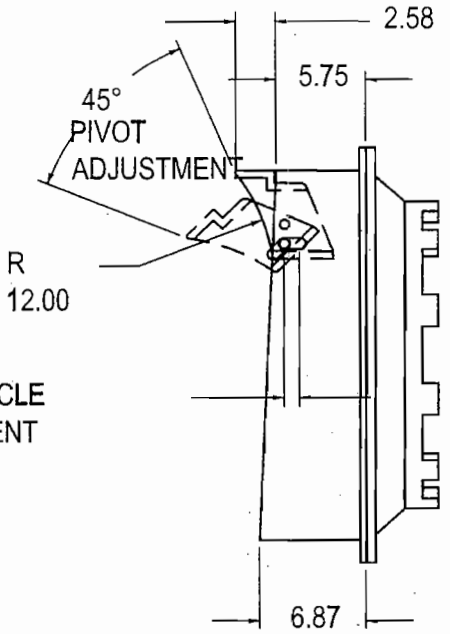
GRATE HAS H-25 HEAVY DUTY RATING.
QUALITY: MATERIALS SHALL CONFORM TO ASTM A536 GRADE 70-50-05.
MATERIAL: DUCTILE IRON
PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT.
LOCKING DEVICE AVAILABLE UPON REQUEST.

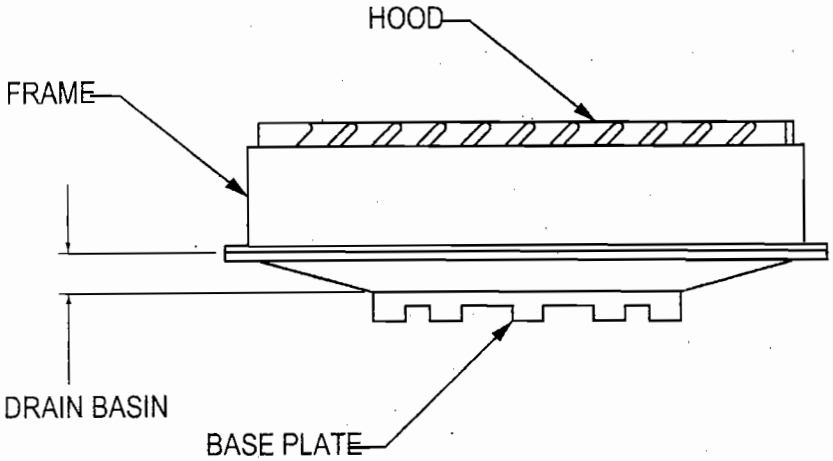
APPROX. DRAIN AREA OF GRATE = 327.25 SQ IN.
APPROX DRAIN AREA OF GRATE & HOOD @ LOWEST SETTING = 372.25 SQ IN.
APPROX DRAIN AREA OF GRATE & HOOD @ LOWEST + 1" SETTING = 405.13 SQ IN.
APPROX DRAIN AREA OF GRATE & HOOD @ LOWEST + 2" SETTING = 438.01 SQ IN.
APPROX DRAIN AREA OF GRATE & HOOD @ LOWEST + 3" SETTING = 470.89 SQ IN.
APPROX DRAIN AREA OF GRATE & HOOD @ HIGHEST SETTING = 503.77 SQ IN.
APPROX. WEIGHT OF GRATE = 123.0 LBS.
APPROX. WEIGHT OF GRATE, FRAME & HOOD ASSEMBLY W/ 18" BASE = 488.0 LBS.
APPROX. WEIGHT OF GRATE, FRAME & HOOD ASSEMBLY W/ 24" BASE = 476.5 LBS



DETAIL NO. 543-4		2' X 3' HIGH FLOW VANE GRATE	REVISED	DETAIL NO. 543-4







1. CURB INLET GRATE FITS DRAIN BASIN SIZES: 18", 24" & 30"
2. MATERIAL: DUCTILE IRON H-25 RATED GRATE CONFORMING TO ASTM A536 GRADE 70-50-05
3. ALL CASTINGS ARE FURNISHED WITH BLACK PAINT AND ZINC PLATED FASTENERS
4. LOCKING DEVICE AVAILABLE UPON REQUEST
5. SLOPE OF GRATE SURFACE IS 2.88%
6. CURB INLET FRAME INSIDE VOLUME IS APPROX 2.73 CU FT
7. APPROX. DRAIN AREA = 434.58 SQ IN

ETAIL NO. 543-5	2' X 3' CURB INLET DETAIL TYPE "B"	REVISED	DETAIL NO. 543-5

Case No. 07-04

631.3.5 Service Taps: One inch and ¾ inch service taps to new meter mains may be made with a saddle, tapped coupling or direct tap in accordance with the following provisions:

The Developer may use heavy tapped couplings for meter service connections on all sizes of pipe including the 3 inch pipe in cul-de-sac streets. Bronze corporation stops must be installed in the tapped couplings prior to pressure testing or disinfection of the water main. Normally in subdivisions no saddles are required for 6 inch pipe and larger. At the Contractor's option, saddles may be used on all 6 inch pipe and larger. All service connections on major and collector streets shall be made with saddles or heavy duty tapped couplings regardless of the water main size or service pipe size. All taps on pipe smaller than 6 inches must be made by either a saddle or heavy tapped coupling with bronze insert. Direct taps must be made by the use of a corporation stop with tapered AWWA machine thread. All wet taps must be made by the Mueller Type B-100 tapping machine or approved equal. A sharp tapping bit must be used in order to obtain clean sharp threads. In general, each tapping tool should be resharpened or discarded after making 6 taps. All copper service pipe which is attached to metallic water mains shall be insulated at the corporation stop with a dielectric insulator. The minimum distance between taps, saddles, and tapped couplings shall be 3 feet.

631.4 TESTING: Remove this sentence

All services, service taps and fittings shall be tested along with the water main in accordance with Subsection 610.14.

631.5 CLEANUP AND COMPLETION:

Upon completion and acceptance of all phases of the water main and meter service lines the Developer shall release the new subdivision water system to the Contracting Agency for final operation and maintenance with all interior valves and corporation stops in open position and with all meter curb stops and valves at the connections to existing mains closed.

631.6 INSPECTION:

The Developer's Engineer shall make an as-built plan and make a record of the locations of all water service connections prior to the connections being covered up. This as-built plan shall give the stationing of each service tap. The stationing to be continuous for each street, and shall begin at the street intersection or property line at the end of the block.

631.7 SERVICE OVER 2 INCHES:

All service taps larger than 2 inches shall be made by the Agency after an application and payment of prevailing fees, unless otherwise required by the Agency.

631.8 SERVICE ON EXISTING MAINS:

Where all or part of a new subdivision is served by existing water mains, only authorized personnel of the Contracting Agency shall install the service connections upon proper application and payment of prevailing fees.

End of Section

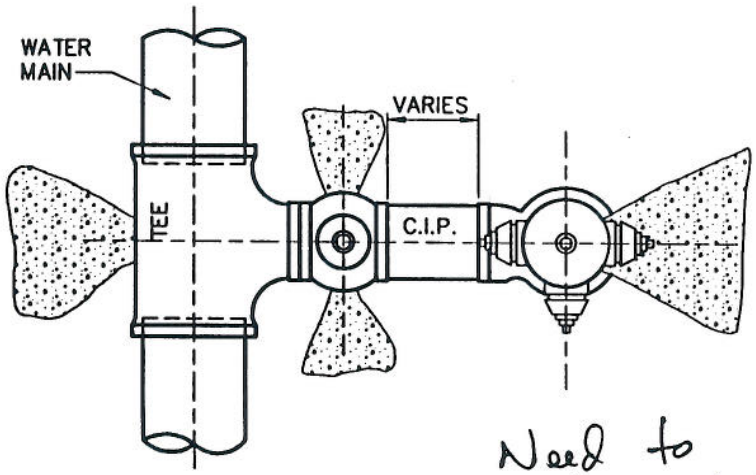
Mesa proposes to delete this sentence since this requirement is not needed or provided.

Proposed revision to allow joint restraint

Case No. 07-05

NOTES:

1. JOINTS BETWEEN THE VALVE AND THE MAIN SHALL BE FLANGED TYPE. JOINTS BETWEEN THE VALVE AND HYDRANT SHALL BE RESTRAINT OR MECHANICAL TYPE.
2. 90° BEND NOT REQUIRED IF SUFFICIENT ROOM FOR PERPENDICULAR INSTALLATION.
3. FOR CONCRETE THRUST BLOCKS, SEE DETAIL 380.
4. A FLANGE JOINT BY MECHANICAL JOINT VALVE MAY BE USED AS THE TRANSITION BETWEEN THE JOINT TYPES.
5. SEE DETAIL 362 FOR LOCATION OF HYDRANT.
6. FINISH GRADE SHALL BE GROUND LEVEL, SIDEWALK, ADJACENT SIDEWALK, PAVEMENT, ADJACENT CURB OR OTHER NEARBY OBSTRUCTION DENYING WRENCH ACCESS TO THE BOTTOM FLANGE BOLTS.
7. In lieu of thrust blocks an approved joint restraint system can be used.



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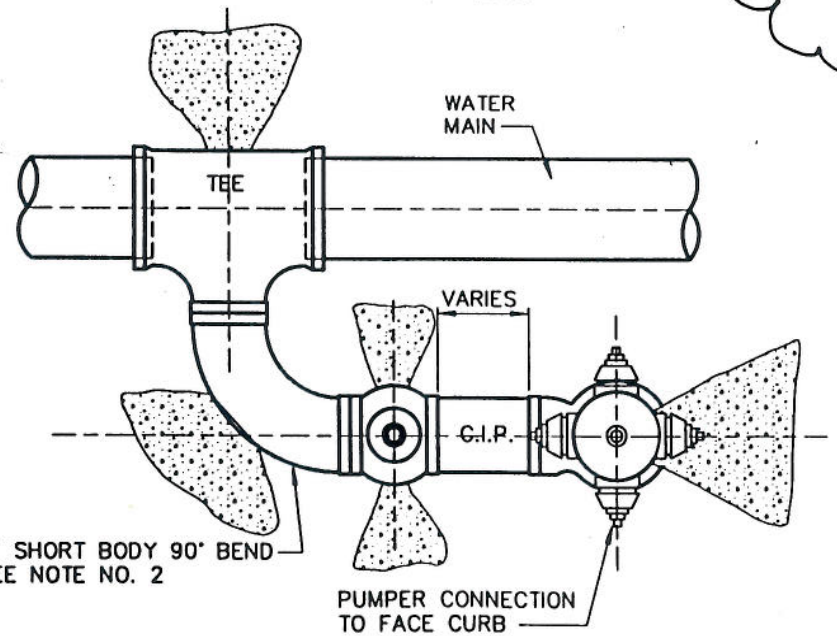

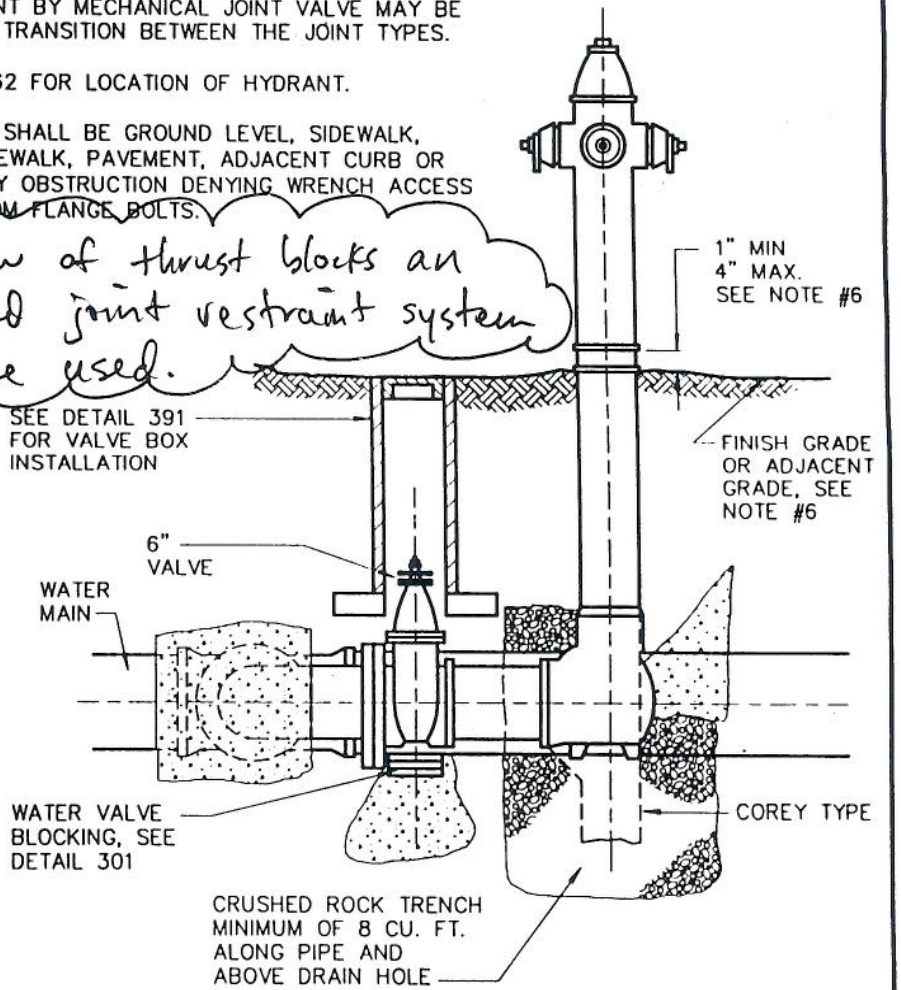

DETAIL NO.			REVISED	DETAIL NO.
360	MARICOPA ASSOCIATION of GOVERNMENTS STANDARD DETAIL ENGLISH	FIRE HYDRANT INSTALLATION		360