

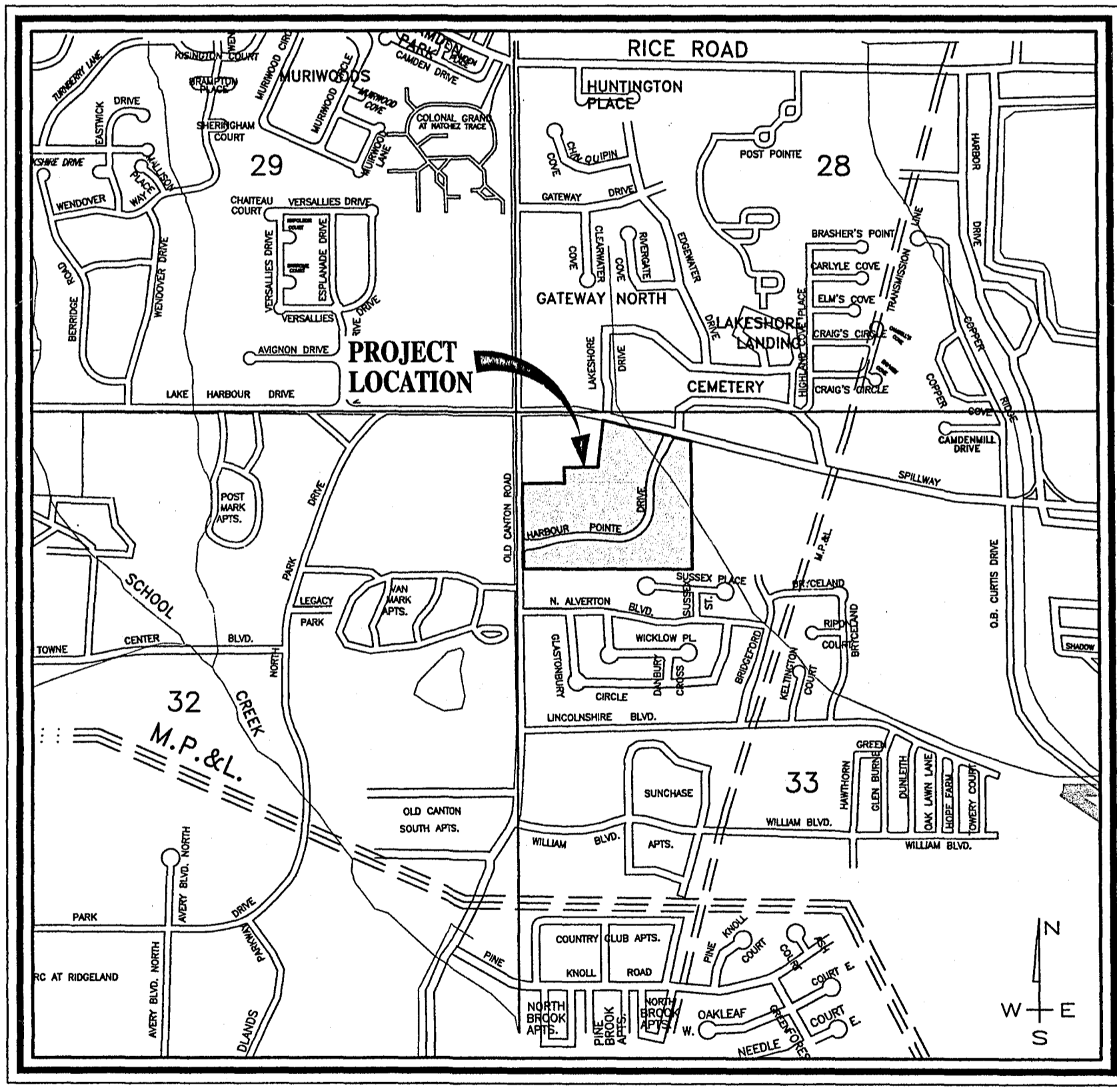
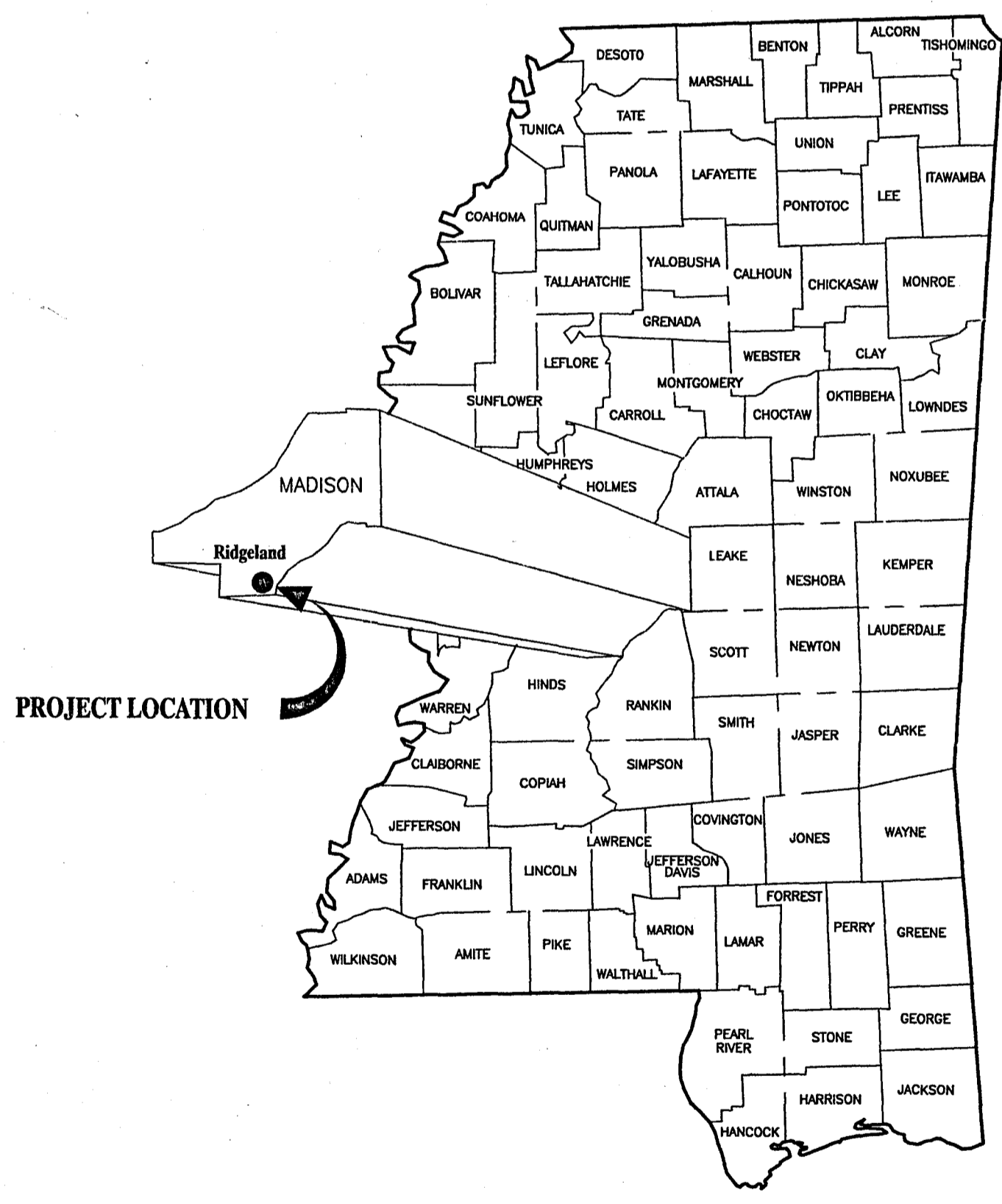
CONSTRUCTION PLANS FOR HARBOUR POINTE CITY OF RIDGELAND MADISON COUNTY, MISSISSIPPI

A DEVELOPMENT OF LAKE HARBOUR CROSSING INVESTMENTS, LLC

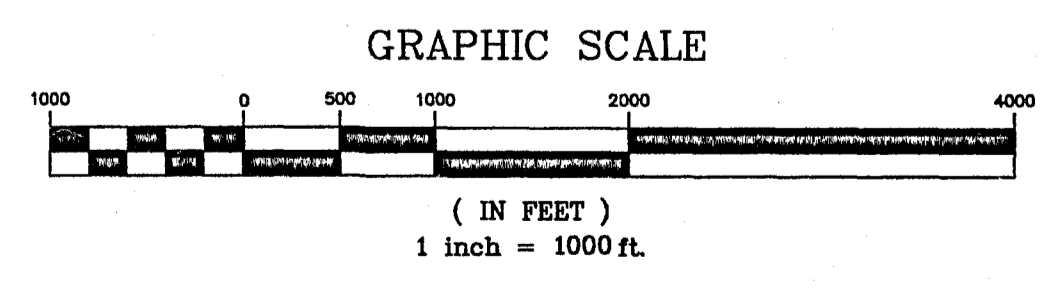
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 AUG 10 2007
 COMMUNITY
 DEV. DEPT.
 THE CITY
 RIDGELAND
 MISSISSIPPI

OFFICE COPY _____
 PLANS REVIEW _____
 CD Director JRH 8-22-07 -ok
 PW Director [Signature]
 City Planner NWB 8/16/07
 Traffic Engineer DW 8-18-07
 Drainage Engineer [Signature]
 Fire Official _____
 Police Official _____

Site plans will not go forward to the
 Architectural Review Board or the Mayor
 and Board of Aldermen prior to the above
 listed.



VICINITY MAP



CITY OF RIDGELAND OFFICIALS

MAYOR:

GENE F. MCGEE

CITY CLERK/ADMINISTRATIVE DIRECTOR:

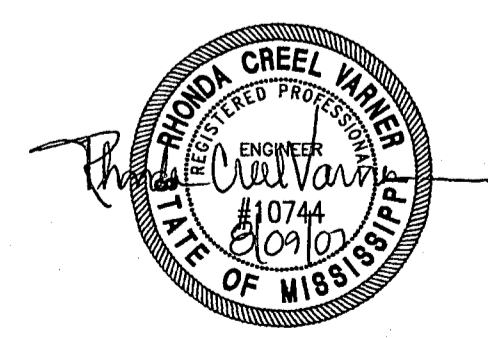
DAVID OVERBY

BOARD OF ALDERMEN:

- GERALD STEEN - AT LARGE
- KEN HEARD - WARD I
- CHUCK GAUTIER - WARD II
- KEVIN HOLDER - WARD III
- LARRY ROBERTS - WARD IV
- SCOTT JONES - WARD V
- LINDA DAVIS - WARD VI

PUBLIC WORKS DIRECTOR:

JOHN M. McCOLLUM



Prepared By:
STERLING
Consultants
 INCORPORATED
 CONSULTING ENGINEERS

RHONDA CREEL VARNER, P.E.
 MS LICENSE NO. 10744

PWP-00851

REVISION	BY	DATE
REVISED PER CITY OF RIDGELAND COMMENTS ON 08/06/07	GDD	08/23/07

GENERAL NOTES

1. The controlling technical specifications for items comprising a part of this project are the standard specifications and requirements of the City of Ridgeland. In addition, the descriptions, references, notes and standards stated on or included in these Construction Plans and the requirements of any document which is a part, by attachment or reference, of the Construction Plans shall be applicable. All materials used shall be new, manufactured by a recognized manufacturer, enjoy a good reputation for performing as intended over time, and if applicable, shall be those specific brands, types, etc., specified by the City of Ridgeland. A manufacturer's recommendations for handling and installing its materials shall also be followed. In those instances where there may be a conflict among requirements, the more restrictive shall control unless expressly permitted otherwise by the Engineer, but in no event shall the standards and requirements of the City of Ridgeland be knowingly not achieved.

2. No activity is to be performed in any manner which is not in compliance with any requirement of the City of Ridgeland or an Approval Agency. No activity is to be performed in any manner which may be deemed unsafe or improper by the Engineer or any federal, state, county or local agency or authority lawfully exercising jurisdiction in such matters, including without limitation OSHA. No activity is to be performed in any manner which is not in conformance with the predominately prevailing methods, procedures or manner for similar work in the City of Ridgeland in central Mississippi. All activities are to be performed in a safe and proper manner in order to ensure acceptance of the facilities by the Engineer, Owner, Accepting Jurisdiction and Approving Agencies.

3. A contractor must verify through Mississippi One-Call and the local jurisdictions the existence and location of any and all utility facilities within the project site and must conduct its activities and operations to protect the integrity and operation of utility facilities at all times.

4. A contractor shall furnish, install and maintain any necessary traffic control barriers, signage and/or signals which may be required by the Engineer, Owner, City of Ridgeland, the County and/or the Mississippi Department of Transportation whenever its activities and operations may affect traffic on city or county streets or state highways.

5. A contractor shall adhere to the requirements of the Storm Water Pollution Prevention Plan and the related permit(s) issued for this Project by the Mississippi Department of Environmental Quality (DEQ) and/or U.S. Department of the Army Corps of Engineers.

6. With respect to bedding flexible sanitary and storm sewer pipes, the installation embedment requirements shall be that specified by the manufacturer of the pipe. The prevailing practice has been and is that Class IV bedding is normally acceptable. However, the moisture content of the soil being used must be properly and carefully controlled. If the soils available from the trench excavation are too wet or are otherwise unsuitable, Class III bedding material must be used.

MATERIAL REQUIREMENTS

STREETS

- Concrete for curb and gutter shall be 3,000 psi minimum. See curb and gutter detail.
- Hot bituminous pavement base course mixtures and materials shall meet specification BB-1 Type 6 of the Mississippi Standard Specifications for Road and Bridge Construction, latest edition.
- Hot bituminous pavement surface course mixtures and materials shall meet specification SC-1A of the Mississippi Standard Specifications for Road and Bridge Construction, latest edition.
- The hot mix asphalt (HMA) mixtures shall meet the following production requirements. At least 10 days prior to the start of work the Contractor shall submit for approval by the City Engineer a proposed job-mix formula (JMF) signed by a MDOT Certified Mixture Design Technician meeting the job-mix formula requirements.
- See typical street section detail.

STORM DRAINAGE

- Pipe - Reinforced concrete pipe, round ASTM C-76 or arch, ASTM C-506 without lifting holes. Storm drainage pipe in the locations marked.
- Joints - Joints for round concrete pipe shall be rubber gaskets. Joints for arch pipe shall be bituminous plastic cement or pre-formed joint compound. All joints shall be wrapped with 24" strip of filter fabric around outside of pipe.
- Inlets and Junction Boxes - Precast concrete, ASTM C-478 or concrete block construction.
- Inlet castings - Vulcan RCB-7 or equal as approved by accepting jurisdiction and engineer.

WATER

- Main - PVC C900, Class 150 or Ductile Iron Class 52
- Joints - Tylon joints with rubber gasket ANSI/AWWA standards.
- Fittings - Ductile iron, compact fittings mechanical joint - ANSI/AWWA C153/A21.53-88. mechanical joint flanges shall be mega lugs.
- Valves - Ductile Iron Metrosel 250 resilient seated gate valves - AWWA C509.
- Fire Hydrant - Improved traffic type w/one (1) 5-1/4" pumper and two (2) 2-1/2" openings as manufactured by Mueller Company or equal, w/ NSF threads.
- Tracer Wire - No. 12 gauge, THHN, insulated for direct bury.
- Valve Boxes - Cast Iron, 3 piece adjustable stamped w/ "WATER".
- Service Line - 2" minimum, Type K copper, ASTM B88; polyethylene (PE), AWWA C901; or polybutylene (PB), AWWA C902. Services to be in 4" PVC sleeves (160 psi solvent weld) under streets.
- Meter Box - Plastic meter box w/ metal flip top reading cover.

SEWER

- Main & Service - PVC, SDR-26, ASTM A-3034 or ductile iron, Protecto 401 ceramic epoxy lined.
- Joints - Slip on w/locked-in rubber gasket, ASTM F-477.
- Manholes - Pre cast concrete, ASTM C-478. Coal tar or 100% epoxy coating (0.20 mil) required on interior and exterior of manhole sections and on manhole steps.
- Pipe Boots - Kor-n-Seal molded rubber connectors, or equal.
- Frame & Cover - Sast iron, ASTM A-78 or equal.

COMPONENT NOTES

STREET

- Street & parking subgrade areas where expansive clays (CH) are encountered within 3.5' of finished grade shall be undercut and back filled as required to separate pavement from expansive clays by a minimum 3 foot thick layer of select silty clays (CL) or sandy clays (CL) having a liquid limit of less than 40 and a PI within the range of 8 to 20. The back fill and fill materials should be spread in loose lifts having a maximum thickness of 9 in. and compacted to not less than 95 percent of standard Proctor maximum dry density (ASTM D 698) at moisture contents within 3 percentage points of the optimum moisture content. Stability must be evident during compaction of each lift before any subsequent lifts of fill or back fill material are added.
- Undercutting, back filling, and mechanical trench compaction shall extend a min. of 2 feet beyond back of curb. Lime treatment (if used) shall extend a minimum of 1 foot beyond back of curb.
- Prior to placing asphalt base material, paving contractor shall 1) fine-grade the subgrade material to the proper section to permit placement of the required thickness of base course; 2) compact and proof-roll subgrade to achieve stability; 3) ensure required subgrade density has been achieved and verified by soils testing laboratory; and 4) ensure subgrade is acceptable to accepting jurisdiction.

CURB AND GUTTER

- Curb and gutter shall be 24" standard. Gutter shall be inverted as and where necessary to match drainage patterns. (See detail).
- Subgrade beneath curb and gutter shall be fine graded and compacted to achieve stability under pressure of the rear wheel loading of a motor grader moving slowly over the curb and gutter subgrade.
- Intersection curb radii shall be 20' measured to back of curb unless otherwise shown.
- After forms and/or curb and gutter string lines have been set and before concrete is poured, contractor shall verify that all gutters drain to inlets.
- Expansion joints in curb and gutter shall be 1/2" joint material placed at 60' (maximum) intervals.
- Contraction joints in curb and gutter shall be scored at intervals not greater than 10 feet and spaced equally between expansion joints.
- Concrete for curb and gutter shall be 3,000 psi minimum.
- Reinforcement in curb and gutter shall be 1/2" diameter steel re-bar.

SIDEWALKS

- Sidewalks are not a part of this project unless a pay item.

STORM DRAINAGE

- All storm drainage pipe and inlets shall be flushed and cleared of any construction materials and/or sediment upon project completion.

EROSION CONTROL

- The construction exit shall be maintained to minimize erosion and deposition of sediment off-site. All materials spilled, dropped, washed or tracked from vehicles or site onto public roadways must be removed immediately.
- Curb and area inlet sediment traps shall consist of hay bales fully surrounding each inlet.
- Each contractor performing any work required by these plans shall comply with all requirements specified on the storm water pollution prevention plan included herein, including weekly inspection requirements. Copies of the inspection report forms are available from the Engineer or on line @ WWW.DEQ.STATE.MS.US.

WATER & SANITARY SEWER

- All water and sanitary sewer construction to be in accordance with the City of Ridgeland standard specifications.
- Sewer service pipes shall be 6" SDR-26 PVC; Sewer mains shall be 8" SDR-26 PVC.
- Water service lines shall be 2" diameter PB, PE or Copper. Water Mains shall be 12" PVC C900, Class 150 or Ductile Iron Class 52. Services to be in 4" PVC sleeves (160 psi solvent weld) under streets.
- Water and sanitary sewer service lines shall terminate where shown for connection by plumbing contractors. All services shall be capped or temporarily sealed to prevent sediment from entering service lines. The terminus of each service shall be marked with a steel tee post with a blue tip for water and red tip for sewer.
- Back fill of all trenches under existing or proposed pavements and curb and gutter shall be mechanically compacted in 9" maximum loose lifts to a minimum of 95% standard Proctor peak maximum dry density.
- Deflection tests shall be performed on all flexible sewer pipe. The test shall be conducted after the final back fill has been in place at least 30 days. Deflection tests shall be run using a rigid ball or mandrel having a diameter equal to 95% of the inside diameter of the pipe. The test shall be performed without mechanical pulling devices.
- Contractor shall maintain records during construction of horizontal and vertical location of all water and sewer services for as built records.
- Water mains shall be laid at least ten (10) feet horizontally and 18" vertically from any sewer or manhole (water over sewer).
- Where water lines cross over sewer lines, the above requirements will be waived if pipe segments are centered to provide maximum spacing of the joints of both water and sewer lines and a vertical separation of at least 18" (water over sewer) is maintained.
- Water mains shall be installed with four (4) foot minimum cover under pavement sections and three (3) foot minimum cover elsewhere. In areas where mains are to be installed adjacent to the streets located in a cut section, the minimum depth shall be three (3) foot below top of curb.
- Irrigation/utility sleeves shall be installed with maximum five (5) foot separation, minimum four (4) foot depth and stubbed to surface, capped and marked for future use.
- Tracer wire shall be installed on PVC water mains.

LEGEND

	PROPERTY LINE
	LOT LINE
	RIGHT OF WAY LINE
	EASEMENT
	SETBACK LINE
	CENTER LINE
	EDGE OF PAVEMENT
	BACK OF CURB
	EXISTING CONTOUR
	PROPOSED SANITARY SEWER & MANHOLE
	PROPOSED STORM SEWER & AREA INLETS
	SANITARY SEWER
	WATER LINE
	PROPOSED WATER LINE
	PROPOSED WATER VALVE
	PROPOSED FIRE HYDRANT
	PROPOSED TEE
	DRAINAGE FLOW
	STREET NAME/STOP SIGN

Note:
Future changes may be necessary due to Traffic Impact Study.

INDEX TO DRAWINGS

SITework PLANS

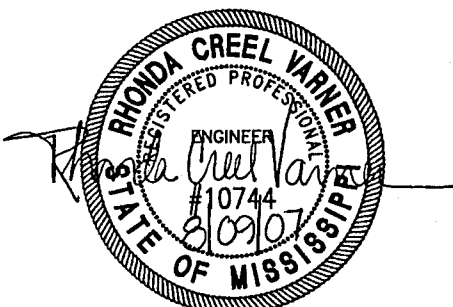
- COVER SHEET
- GENERAL NOTES AND INDEX TO DRAWINGS
- SITE LAYOUT PLAN
- WATER AND SEWER LAYOUT
- STORM DRAINAGE LAYOUT
- STORM WATER POLLUTION PREVENTION PLAN
- PLAN AND PROFILE - HARBOUR POINTE STA. 0+00 - STA. 11+50
- PLAN AND PROFILE - HARBOUR POINTE STA. 11+50 - STA. 18+18.76
PLAN AND PROFILE - 12x6' BOX CULVERT STA. 0+00 - STA. 6+54.02
- PLAN AND PROFILE - OUTFALL A STA. 0+00 - STA. 0+61.61
PLAN AND PROFILE - OUTFALL B1 STA. 0+00 - STA. 1+40.08
PLAN AND PROFILE - OUTFALL B2 STA. 0+00 - STA. 0+90
PLAN AND PROFILE - LATERAL C STA. 0+00 - STA. 4+90.70
- PLAN AND PROFILE - LATERAL D STA. 0+00 - STA. 4+69.20
PLAN AND PROFILE - LATERAL E STA. 0+00 - STA. 1+76.04
PLAN AND PROFILE - LATERAL F STA. 0+00 - STA. 4+04.05
- PLAN AND PROFILE - LATERAL G STA. 0+00 - STA. 3+22.26
PLAN AND PROFILE - LATERAL H STA. 0+00 - STA. 3+45
PLAN AND PROFILE - LATERAL I STA. 0+00 - STA. 0+93.96
PLAN AND PROFILE - LATERAL J STA. 0+00 - STA. 0+59.25
- PLAN AND PROFILE - RELOCATION 10" SANITARY SEWER MAIN STA. 0+00 - STA. 5+02.86
- PAVEMENT MARKING & SIGN PLAN
- TRAFFIC SIGNALIZATION
OLD CANTON ROAD/LAKE HARBOUR DRIVE
- STANDARD WATER DETAILS
- STANDARD SANITARY SEWER DETAILS
- STANDARD STORM SEWER DETAILS
- STORM WATER POLLUTION PREVENTION MEASURE DETAILS

MISSISSIPPI DEPARTMENT OF TRANSPORTATION STANDARD DETAILS

- BOX CULVERT SINGLE CELL
HEIGHT 6 FT.
SPAN 4-20 FT.
- COLLAR DETAILS FOR BOX STRUCTURES
(SINGLE, DOUBLE, TRIPLE & QUADRUPLE)
- TRAFFIC CONTROL PLAN FOR POSTED SPEED LIMIT LESS THAN 65 MPH
(4-LANE: MEDIAN LANE OR OUTSIDE LANE CLOSURE) (WORK DAY ONLY)

BURNS COOLEY DENNIS REPORT

- BORING REPORT
- BORING REPORT
- BORING LOCATIONS & BORING LOGS
- BORING LOGS

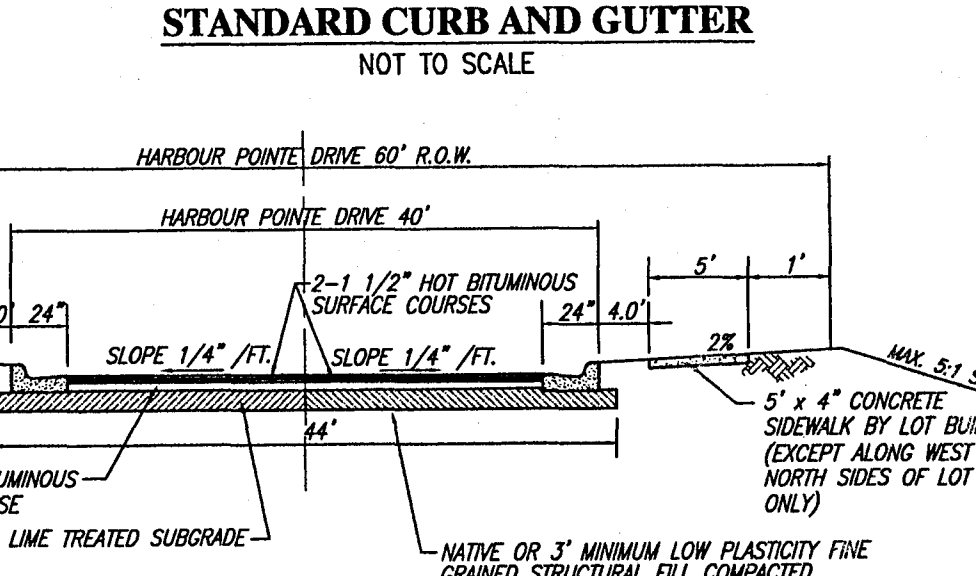
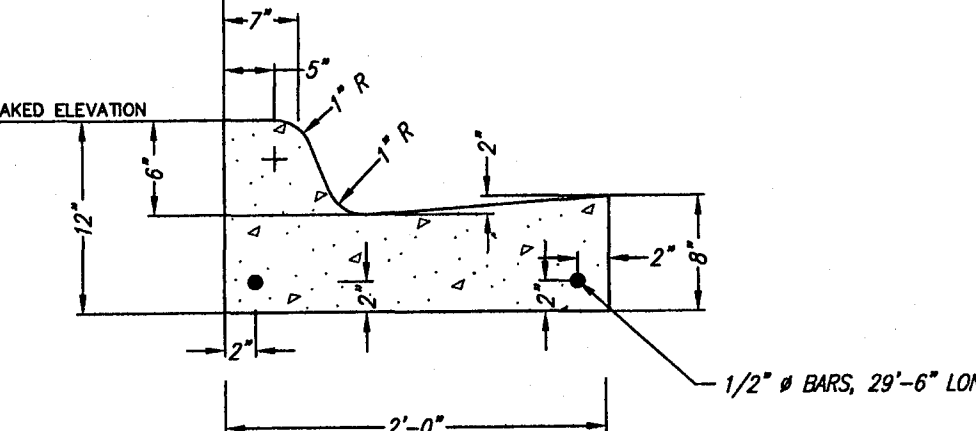
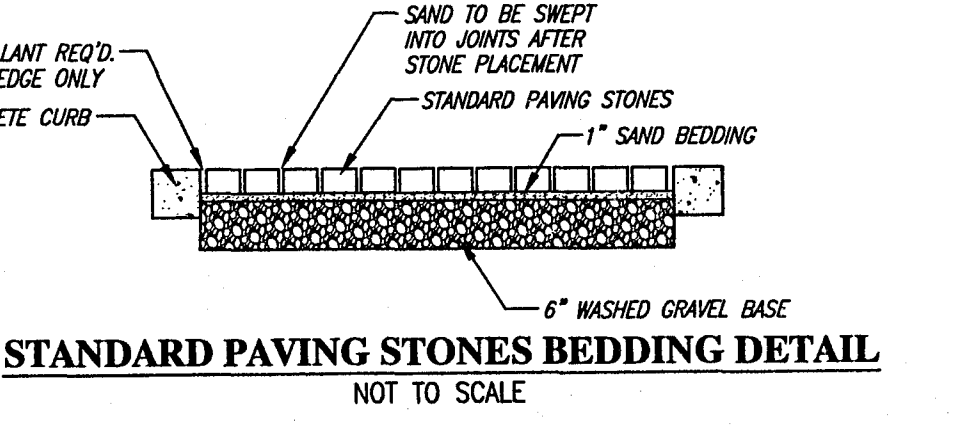
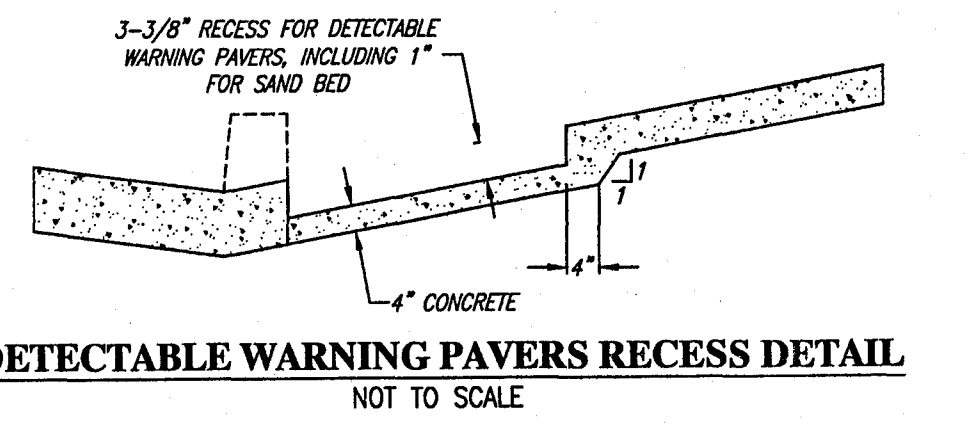
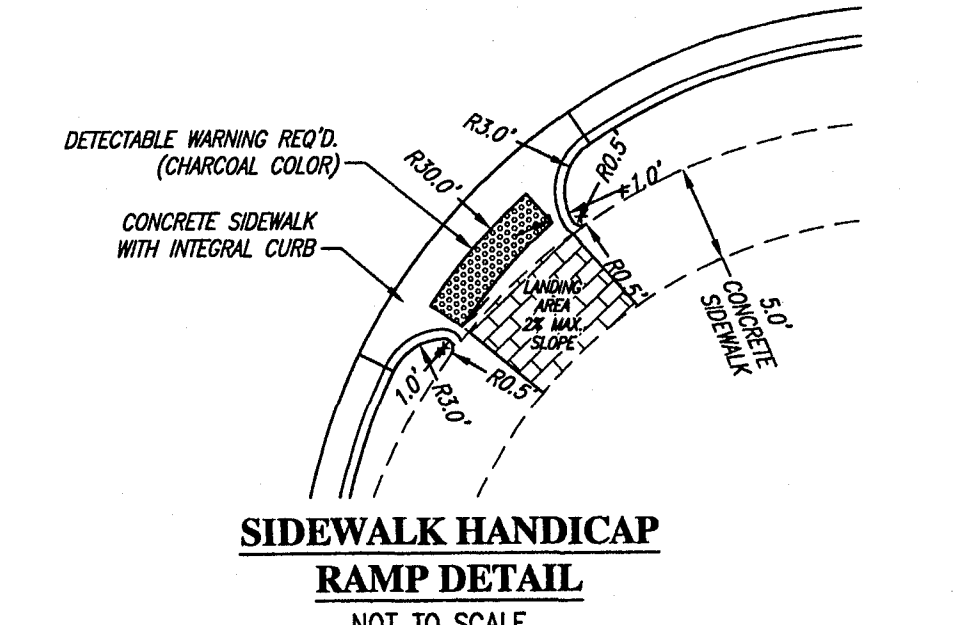
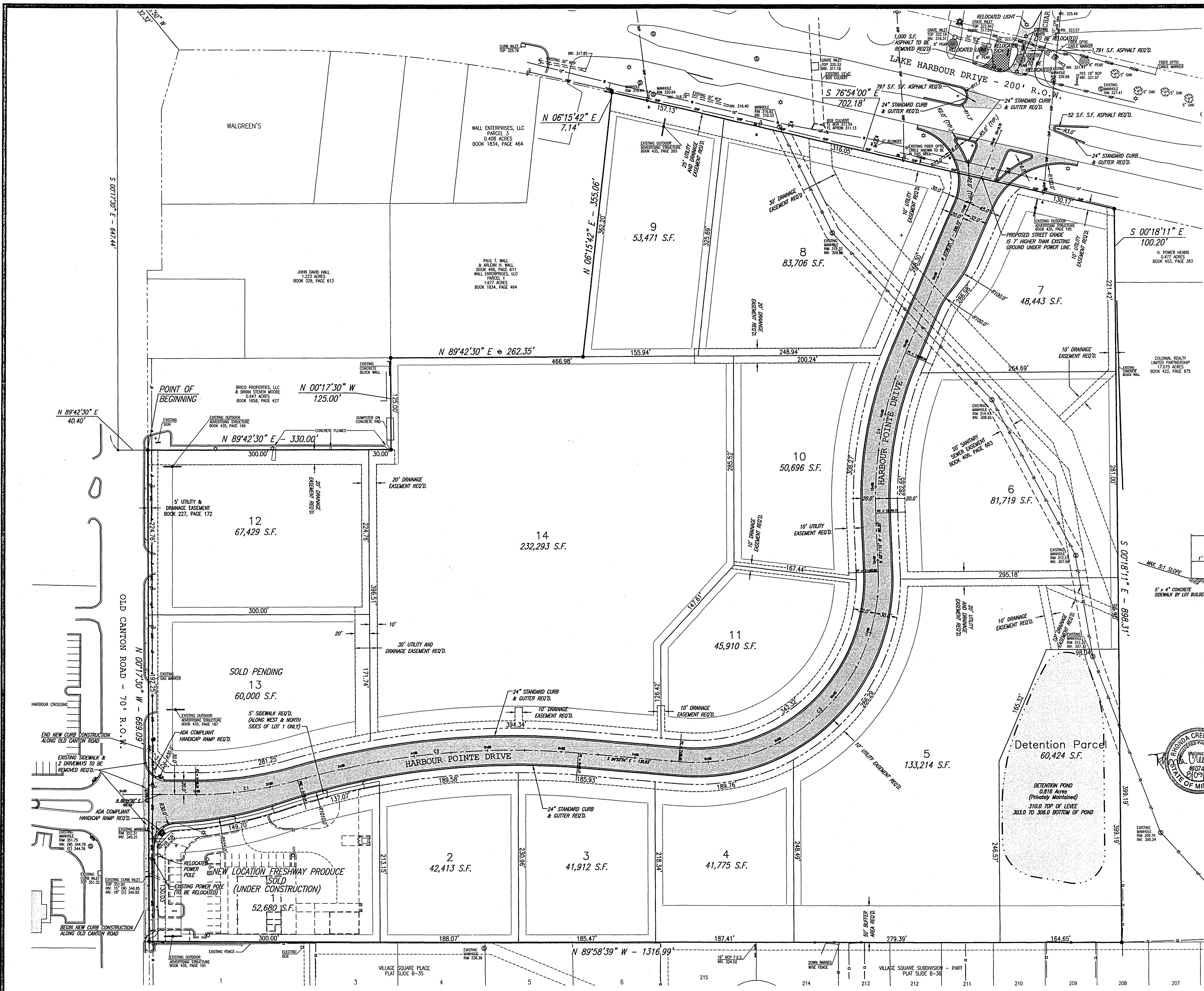


HARBOUR POINTE
A DEVELOPMENT OF
LAKE HARBOUR CROSSING INVESTMENTS, LLC

GENERAL NOTES AND INDEX TO DRAWINGS

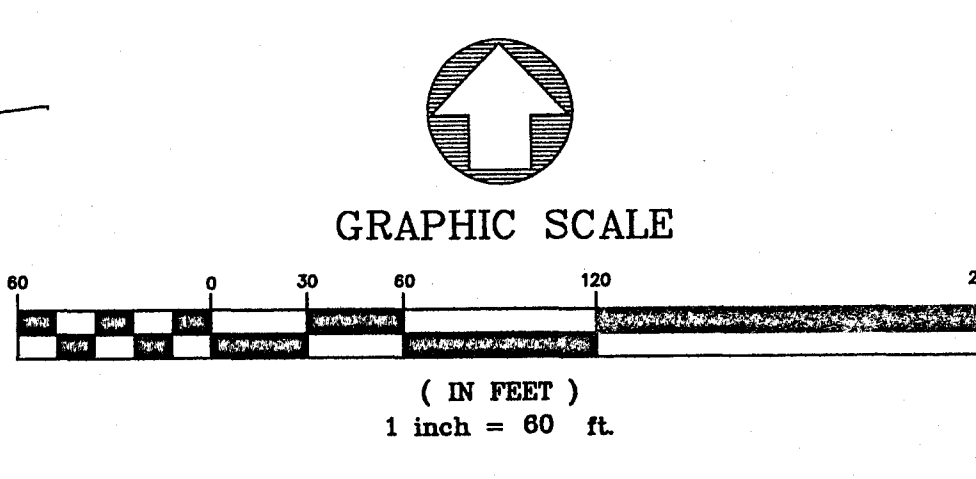
CITY OF RIDGELAND
MADISON COUNTY, MISSISSIPPI

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DRWN: RAP	DATE: 01/24/07		2 OF 25
CHKD: RCV	DATE: 01/24/07		
SCALE: AS SHOWN			



CURVE TABLE

CURVE	ARC LENGTH	RADIUS	CENTRAL ANGLE	CHORD
C1	140.10'	495.00'	16°12'59"	N 81°47'31" E - 139.63'
C2	385.03'	1030.00'	21°25'05"	N 84°23'33" E - 382.79'
C3	424.50'	250.00'	97°17'20"	N 48°27'28" E - 375.31'
C4	223.93'	500.00'	25°38'40"	N 10°38'35" E - 222.07'



**HARBOUR POINTE
A DEVELOPMENT OF
LAKE HARBOUR CROSSING INVESTMENTS, LLC**

**SITE LAYOUT
PLAN**

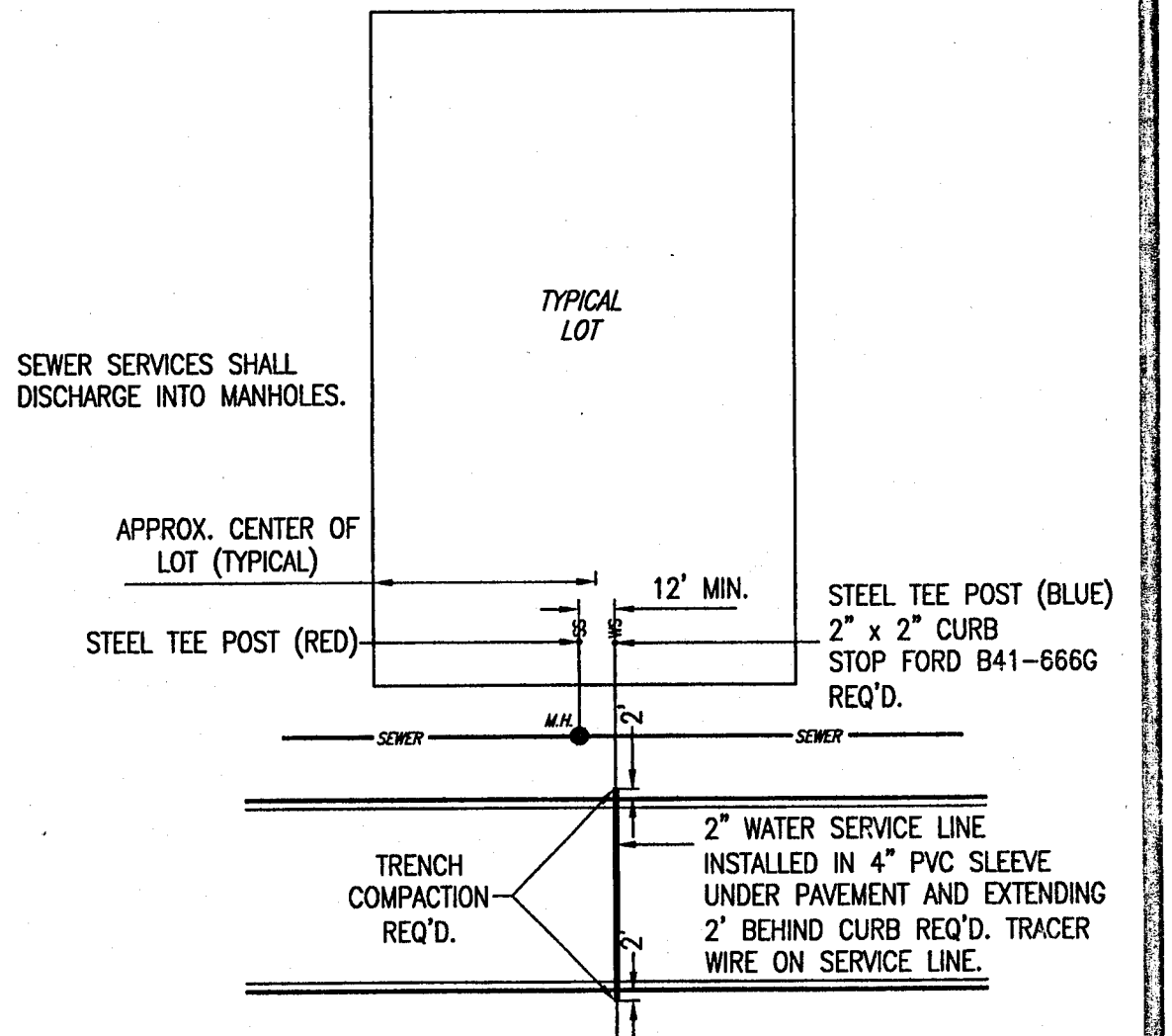
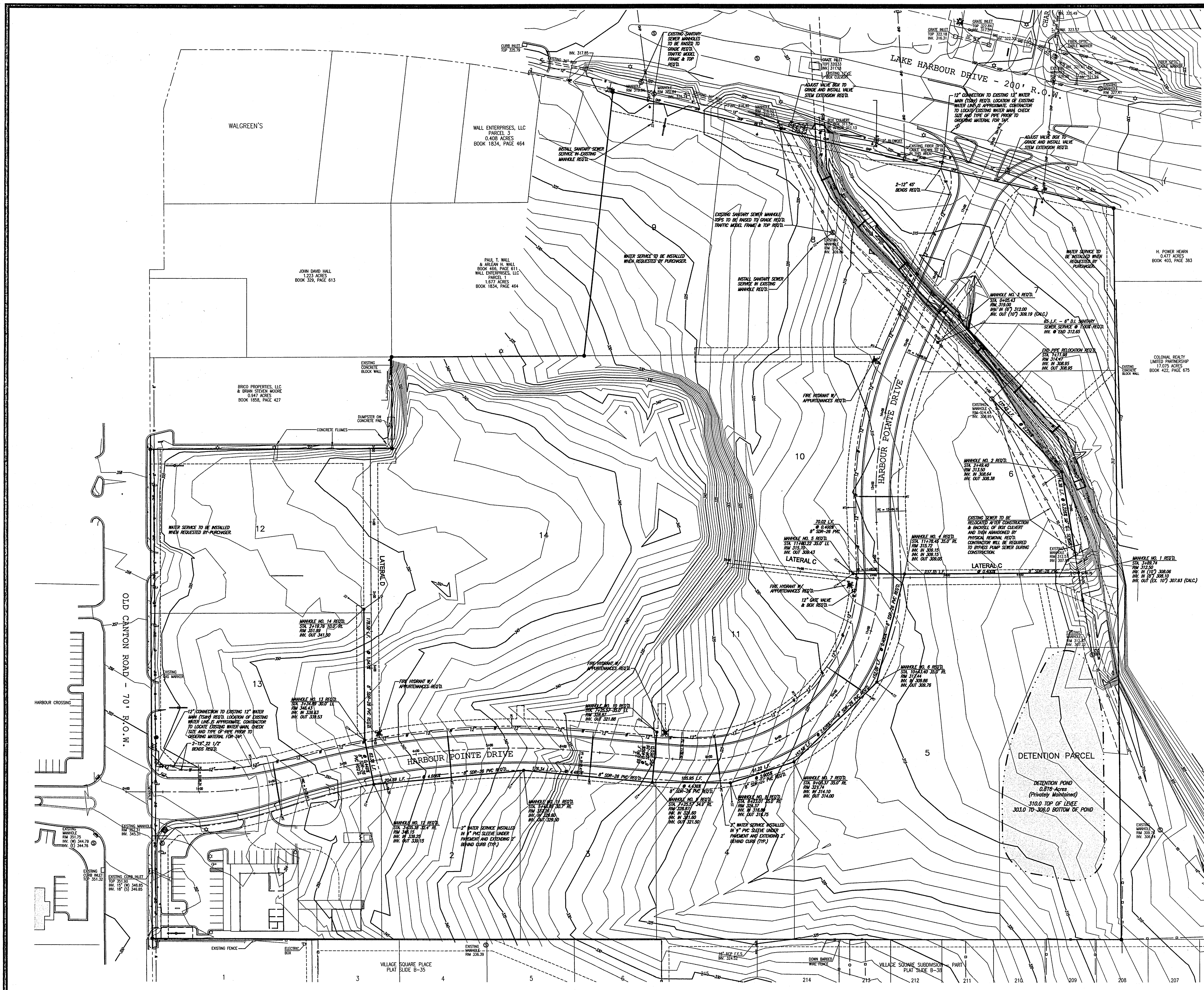
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MADISON COUNTY, MISSISSIPPI**

DESIGN: R.C.V. DATE: 07/10/10
DRAWN: G.B.D. DATE: 07/10/10
CHECKED: R.C.V. DATE: 07/10/10
SCALE: 1"=60'

STERLING CONSULTANTS
CONSULTING ENGINEERS

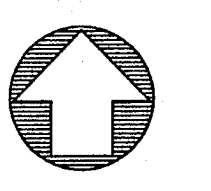
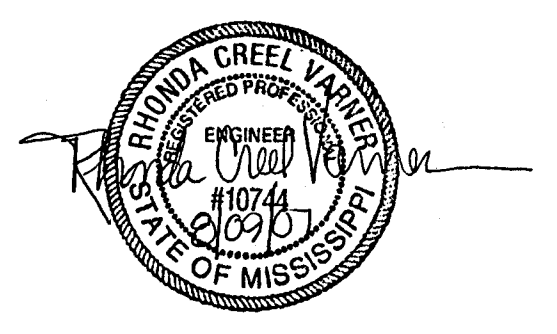
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REVISED PER CITY OF RIDGELAND COMMENTS ON 05/06/07
REVISION BY DATE

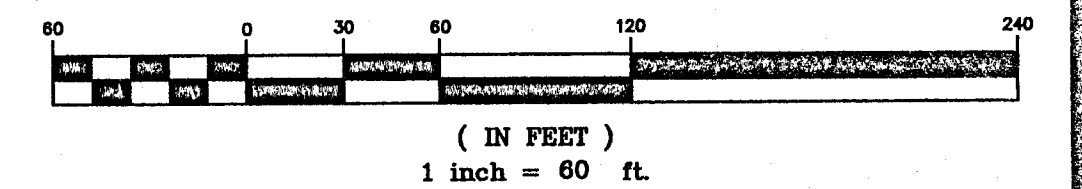


TYPICAL WATER & SEWER SERVICE LOCATION

NOT TO SCALE
SEE DRAWING NO. 2 FOR REQUIREMENTS, AND STANDARD WATER DETAILS DRAWING.



GRAPHIC SCALE



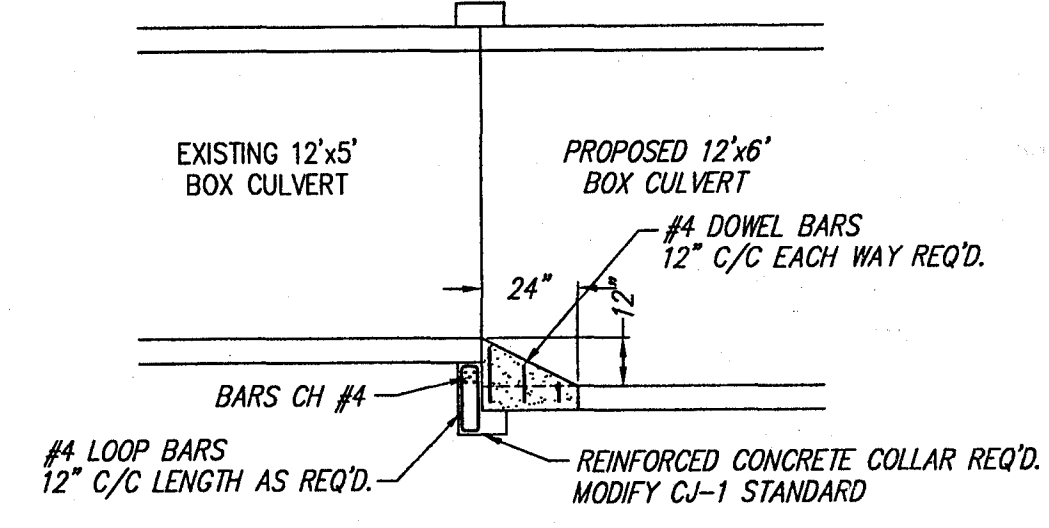
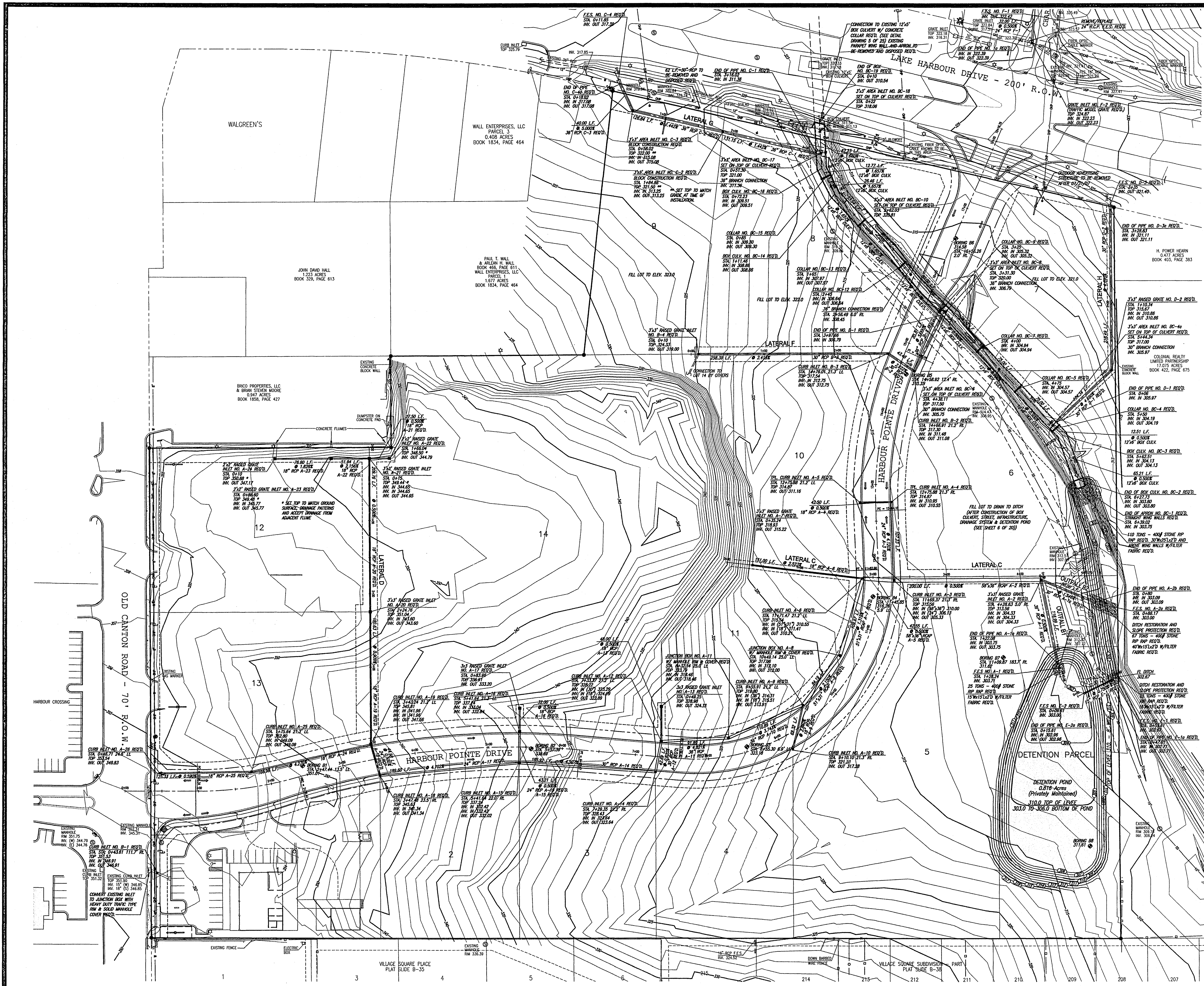
**HARBOUR POINTE
A DEVELOPMENT OF
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**WATER AND SEWER
LAYOUT**

**CITY OF RIDGELAND
MADISON COUNTY, MISSISSIPPI**

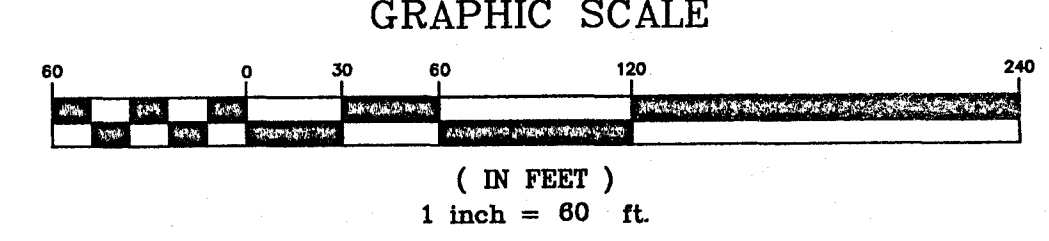
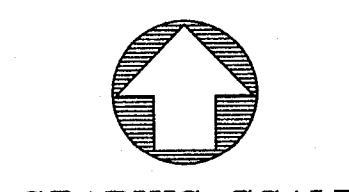
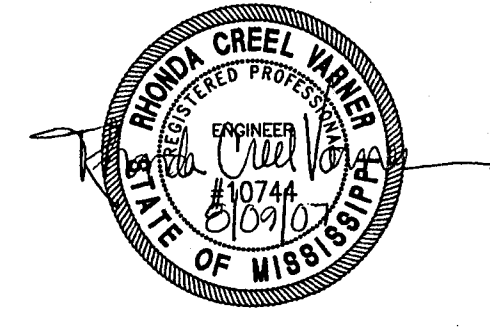
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DRWN: G.P.D.	DATE: 01/10/17		4 of 25
CHKD: R.C.V.	DATE: 01/10/17		
SCALE: 1"=60'			

REVISION	BY	DATE
1	G.P.D.	08/09/17
2	G.P.D.	08/09/17



CONNECTION TO EXISTING 12x5' BOX CULVERT
NOT TO SCALE

- NOTES:
1. BOX CULVERT TO BE CONSTRUCTED PRIOR TO RELOCATING SANITARY SEWER.
 2. BRANCH CONNECTIONS REQUIRED AT ALL PIPE CONNECTIONS TO BOX CULVERT.



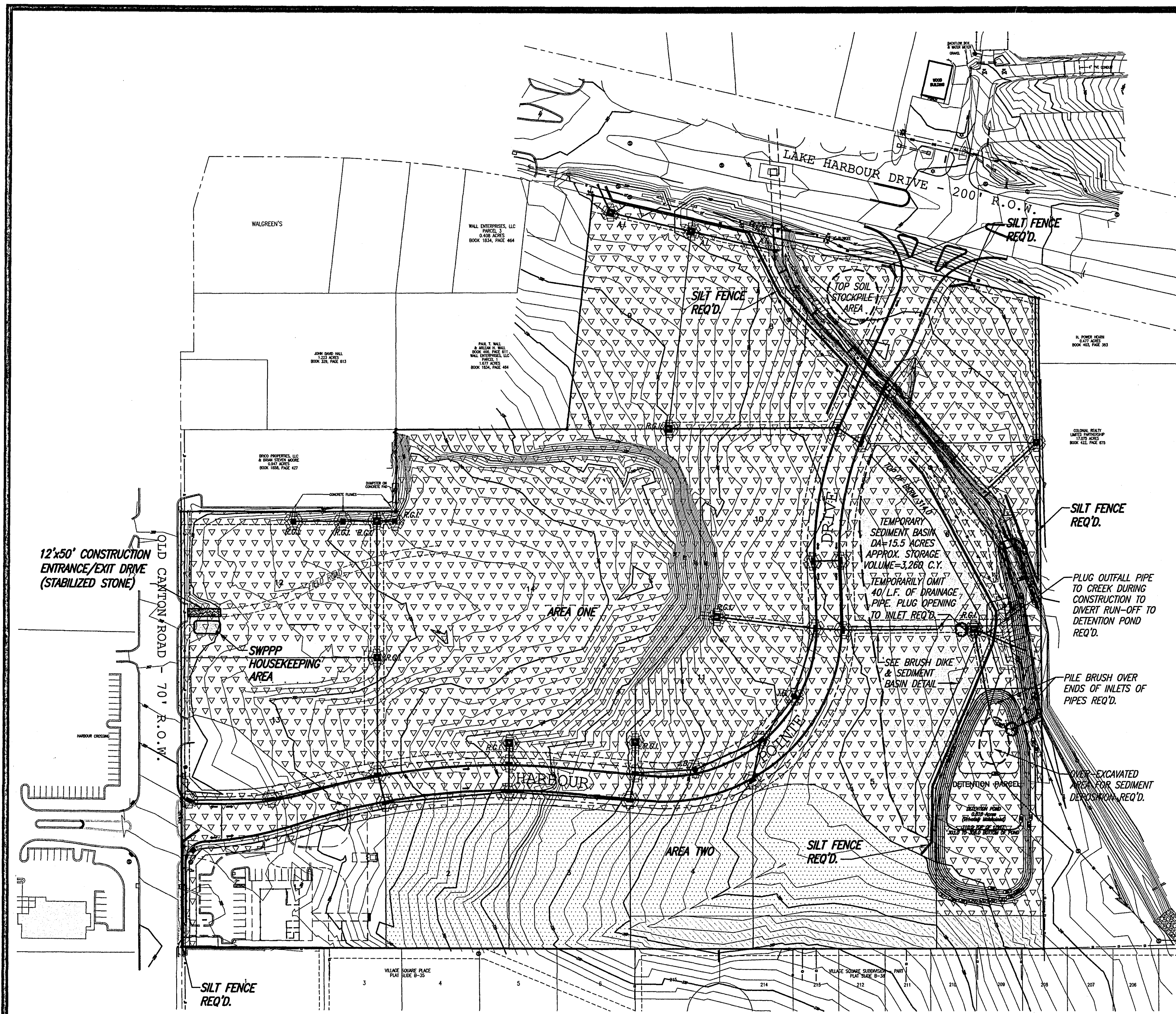
**HARBOUR POINTE
A DEVELOPMENT OF
LAKE HARBOUR CROSSING INVESTMENTS, LLC**

**STORM DRAINAGE
LAYOUT**

**CITY OF RIDGELAND
MADISON COUNTY, MISSISSIPPI**

REVISION	DATE	BY	DATE
REVISD PER CITY OF RIDGELAND COMMENTS ON 08/05/07	08/05/07	gbb	08/05/07

DESIGN: R.V.	DATE: 07/10/10		DRAWING NO.
DRAWN: G.B.B.	DATE: 07/10/10		5 OF 25
CHECK: R.V.	DATE: 07/10/10		
SCALE: 1"=60'			



DIRECTIVES TO CONTRACTOR(S)

- A. The proposed box culvert is to be constructed first in order to physically make storm water run-off (from areas that drain directly into that part of the existing ditch being improved with the culvert) only flow into this culvert through inlets. These inlets are to be surrounded with silt fences, brush and hay bales in order to slow and filter sediments prior to the sediment laden run-off reaching the inlet opening.
- B. The Sediment Basin shown is temporary (See Paragraph C). The area shown for the Sediment Basin is proposed for fill after construction of the storm sewers and the detention pond and will be formed solely by constructing the earthen berm to Elevation 314 along the location shown. Excavated soils from the box culvert's construction are to be used for the construction of this berm, and if necessary, soils from street grading are to be used. Deposited sediments are to be removed from this basin as directed by the Engineer or the SWPPP, which ever is more frequent. Deposited sediments are to be removed from the Project Site.
- C. The Detention Pond will be used for sediment deposition after it is excavated and after the storm sewers have been installed. The north end of the Detention Pond is to be over-excavated to allow for deposition of collected sediments without affecting pond detention volume. However, the Detention Pond will be "cleaned out" at the completion of construction to ensure that the pond drains to the outlet.
- D. The Project Site is divided into two areas for storm water management purposes.

Area One, includes the street right of way, easements for utilities, the temporary sediment basin area, the new box culvert area and those lots north and west of the street. The lots in this area will be disturbed during infrastructure construction and will include 1.) excavation for removal of dumped debris, waste concrete and unsuitable soils, and 2.) placement of fill to bring ground surface to grade for drainage. Storm water from this area will be diverted to the Temporary Sediment Basin.

Area Two, which is essentially proposed Lots 2, 3, 4 and (south part of 5), is topographically shaped to drain east and not toward the proposed street. This SWPPP is intended to take advantage of this topography. This area is not to be disturbed during infrastructure construction except as necessary to ensure that storm water run-off from this area drains directly into the Detention Pond and not into or across areas disturbed by infrastructure construction in order to keep the Sediment Basin from having to pass the run-off from this area.

STORM WATER POLLUTION PREVENTION PLAN

- A. General. The measures and land treatments shown on this plan are applicable to land disturbance activities during infrastructure construction. Should adjoining sites be developed which are set forth in the 1984 edition of "Planning and Design Manual for the Control of Erosion, Sediment and Stormwater" published by the Mississippi Department of Environmental Quality and U.S. Department of Agriculture Natural Resources Conservation Agency.
- B. Erosion and Sediment Controls. All controls must be in accordance with the standards for manufacture and installation which are set forth in the 1984 edition of "Planning and Design Manual for the Control of Erosion, Sediment and Stormwater" published by the Mississippi Department of Environmental Quality and U.S. Department of Agriculture Natural Resources Conservation Agency.
- C. Erosion and Sediment Minimization Practices During Construction.
 - 1. All contractors and subcontractors are to limit their activities and operations to those areas which must reasonably be occupied for safe and proper infrastructure construction. Areas inadvertently disturbed are to be promptly prepared and seeded.
 - 2. Contractors are specifically directed to preserve existing vegetation where possible and to employ those practices and methods which will minimize the erosion and off-site deposition of sediments. Contractors shall selectively implement temporary erosion and sediment control measures appropriate for the topography, type or soil, time of year, and anticipated duration of use.
 - 3. All contractors and subcontractors are to refrain from construction activities during those periods after heavy rainfalls when wet soil conditions cause mud to stick to vehicles leaving the site.
 - 4. Any contractor or subcontractor who fails or omits to employ and implement appropriate and practicable erosion and sediment control measures or who intentionally or unintentionally destroys or damages any erosion or sediment control facility shall be responsible for damages to downhill property caused by erosion stemming from such failure, omission, or destruction and shall promptly repair or replace ditches, drainage culverts or inlets clogged or otherwise affected by such erosion.
 - 5. At the location(s) shown on this plan, or at such other location(s) suitable therefor which from time to time may be directed by the Engineer, there shall be established and maintained by each contractor an area designated the "SWPPP Housekeeping Area."
 - 6. Each contractor performing any work required or implied on the Construction Plans of which this SWPPP is a part, during the period from the date the contractor mobilizes on the project site until the date his work is completely finished, shall monitor, inspect, repair or replace within 24 hours of discovery, maintain and supplement as required each and all of the erosion control facilities required by this SWPPP. Each contractor shall at least once each week promptly clean or repair such facilities even though the controls may have been installed by other contractor(s) or serve areas within the project site but outside of the contractor's immediate work area. Each contractor shall erect, operate, maintain and repair rain gauges following any storm event in which the gauge indicates that more than three (3) inches of rain fell in a 24 hour period, or after any storm event which the Engineer indicates as so severe as to require that field conditions allow, the contractor shall monitor, inspect, repair, replace, maintain and supplement as required any erosion controls which have failed to function as intended. Each contractor shall file monthly with the Engineer a report of each such inspection on the form provided by the Engineer.

D. Measures to be Implemented Prior to Construction.

- 1. Sediment basins, traps and barriers, perimeter dikes, vegetated buffer strips, and other erosion control measures intended to trap sediment on-site shall be constructed as the first step in grading, and shall be functional prior to disturbing uplope lands. The Clearing contractor shall
 - a. install fabric silt fencing at those locations shown on the plans, at such other locations downslope of large areas from which native vegetation is to be removed or substantially disturbed by infrastructure installation activities, and at additional locations designated by the Engineer;
 - b. install sediment barriers or brush dikes made using hay bales stacked across natural drainage ways situated inside and adjacent to the construction site at those locations indicated on the plans or as otherwise directed or appropriate;
 - c. mark with survey tape and/or pin flags specific individual or stands of trees which are to remain undisturbed and areas of vegetation on-site to be protected by buffer strips along the lower perimeter of the construction site. (Mark outside drip line of tree(s).)
 - d. grade, shape and otherwise prepare as an "SWPPP Housekeeping Area" an easily accessible area approximately 20' x 40' which drains to a sump at one end, and provide and erect a sign identifying the area as the "SWPPP Housekeeping Area." This area shall be prepared for use as the location of sanitary facilities for contractor's personnel, or the location of a trash receptacle for disposal of solid waste, and for use for other purposes such as equipment maintenance and concrete chute wash-off.
- 2. Each contractor performing any work required or implied on the construction plans shall remove accumulated sediment and debris along silt fences and around haybale barriers when it has reached one-half height of the protective face. Accumulated sediment and debris shall also be removed from sediment basins when one-half of the original volume has been filled.

E. Additional Measures to be Implemented During Construction.

- 1. The Clearing Contractor shall salvage pine boughs and tree limbs and place same at appropriate locations to reinforce silt fences and/or form brush barriers.
- 2. The Earthwork Contractor shall place a six inch thick, 12' wide, 50' long pad of stabilized crushed stone at the point shown on the plans where construction traffic should enter and leave the construction site. See Storm Water Pollution Prevention Measure Details sheet.
- 3. Provided such is not patently inconsistent with the grading plans, the Earthwork Contractor shall grade and shape ground surfaces to divert stormwater away from disturbed ground surfaces and exposed soils and shall construct check dams, sediment retention basins and other designated or appropriate sediment controls.
- 4. Pipe installation Contractors shall leave all backfilled trenches (except those situated under proposed pavements and curbs) slightly depressed to permit the collection and infiltration of stormwater, the retention of sediments, and the consolidation of backfill soils. Excess trench excavation shall be piled upslope of depressed trenches.
- 5. Drainage Pipe Installation Contractor shall construct inlet sediment traps using hay bales stacked around the openings of all inlets and/or drainage culverts and shall construct outlet erosion mitigation and/or stormwater energy dissipation blocks using pre-mixed dry sand/aggregate/cement in cubic foot kraft paper bags at the discharge end of drainage culverts. Where drainage culverts are installed with a gap to accommodate the construction of area or curb inlets or junction boxes, the drainage pipe installation Contractor shall pour the structure bottom using ready-mix concrete prior to placing hay bales.
- 6. Each contractor performing any work required or implied on the Construction Plans of which this SWPPP is a part, shall provide, use and maintain the facilities within the Area as required by this SWPPP. If a contractor has a requirement for the storage of potentially toxic materials such as fertilizers, chemicals, paints, solvents, etc., the contractor shall be required to provide and maintain within the Area a protected storage area for the storage of these items. Each contractor shall be required to ensure that sanitary facilities are adequately maintained by a service enterprise in business for such purpose.

F. Additional Measures to be Implemented After Street Paving.

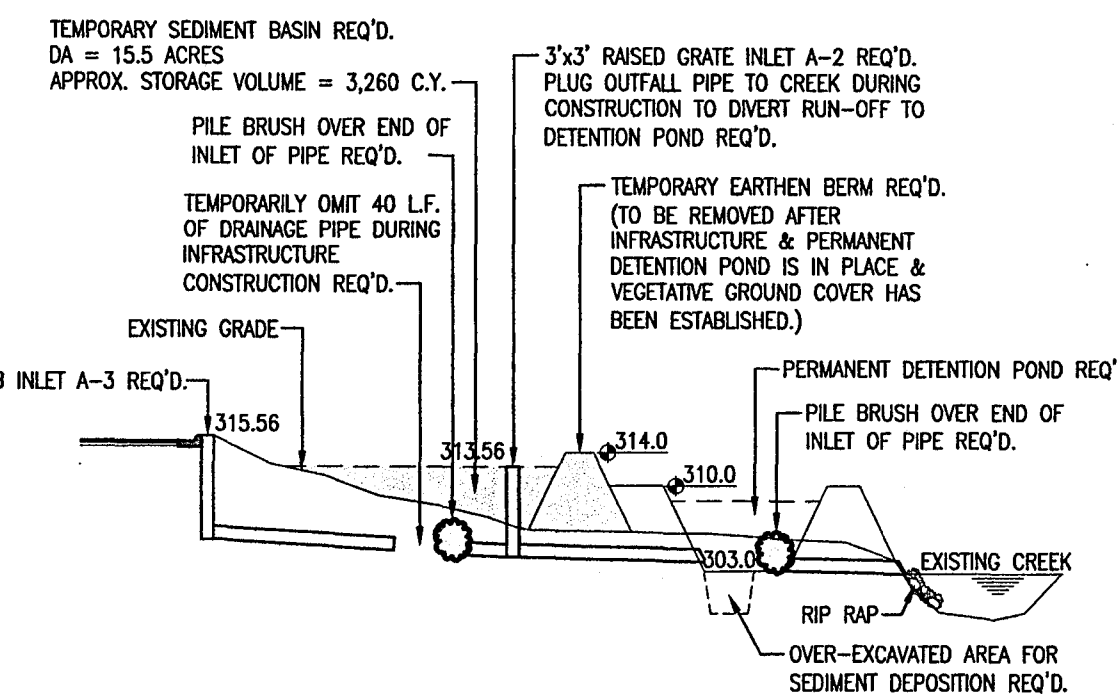
- 1. The Finish Grading Contractor shall grade and shape all ground surface areas disturbed by infrastructure construction activities, remove all sediments collected in traps, and replace and/or restore as appropriate all erosion and sediment control facilities which should remain.
- 2. The Grassing Contractor shall prepare, fertilize, seed and/or sod, and if necessary all non-paved areas disturbed during infrastructure construction activities. The selected species of grass(es) to be sown shall be based on time of year, type of soil, and other relevant site conditions and shall be chosen to control erosion and survive seasonal conditions.
- 3. Pending the establishment of vegetative ground cover, the Paving Contractor shall monitor the build up of sediments on street pavements which may occur following rainfalls and appropriately return same to the areas from which they eroded.
- 4. When disturbed area will be left undisturbed for thirty (30) days or more, the appropriate temporary or permanent vegetative practices shall be implemented within seven calendar days.

G. Post Construction Procedures.

- 1. Pending the establishment of vegetative ground cover, all practicable temporary and permanent erosion and sediment control facilities shall be inspected, maintained and repaired as necessary by the Developer to assure the continued performance of their intended function.
- 2. The Developer shall carry forward all erosion control measures and facilities set forth in this SWPPP to ensure that successive owners will take measures to prevent or mitigate sediment from leaving individual lots and parcels.
- 3. Individual lots within Harbour Pointe are considered a part of a "larger common plan of development or sale" and storm water discharges from these lots caused by land disturbing activities by builders and lot owners are regulated (regardless of lot size or ownership) through a Certificate of Permit Coverage under Mississippi's Large Construction Storm Water General Permit Issued by the Mississippi Department of Environmental Quality. Each new parcel owner or operator must complete the Large Construction Notice of Intent (LCONI) and keep the form on the project site or locally available. In addition, the owner or operator must develop and implement a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must also be kept at the project site or be locally available.
- 4. The Developer will require, by imposing deed restrictions or protective covenants, that successive builders and lot owners
 - a. fully comply with all municipal and state land disturbance and erosion control ordinances, regulations and requirements, and
 - b. fully comply with so much of this SWPPP that is pertinent or appropriate for the lot or parcel conveyed to the builder or owner.
 - c. from the beginning of site preparation through the establishment of permanent vegetative cover, will maintain his lot in such a condition as to minimize off-site damage from erosion, sediment deposits and storm water.
 - d. acknowledge and agree that the Developer will be held responsible for, and will be held harmless from, damages which may occur, as a result of lot preparation activities (including, but not limited to lot grading and shaping) carried out by the builder or lot owner and/or their contractors and subcontractors.

LEGEND

	SPECIFIC AREA TO NOT BE DISTURBED, UNLESS SHOWN OTHERWISE. ALL VEGETATION IN THIS AREA TO REMAIN UNDISTURBED.
	AREA ONE TO BE CLEARED, GRUBBED & EXCAVATED OR FILLED FOR STREET, INFRASTRUCTURE UTILITIES & DRAINAGE & CERTAIN COMMERCIAL LOTS. APPROXIMATE AREA: TO BE FILLED 22.0 ACRES
	AREA TWO TO BE CLEARED, GRUBBED AND EXCAVATED OR FILLED FOR COMMERCIAL LOTS. APPROXIMATE AREA: TO BE FILLED 3.6 ACRES
	TOTAL AREA TO BE DISTURBED 25.6 ACRES
	50' WIDE (UNLESS NOTED OTHERWISE) VEGETATIVE BUFFER STRIP ESTABLISHED USING EXISTING VEGETATION WHERE STORM WATER RUNOFF IS ANTICIPATED TO OCCUR THROUGH SHEET FLOW. AREA IS NOT TO BE DISTURBED.
	SILT FENCE WITH HAY BALES (WIRE REINFORCED)
	SILT FENCE (WIRE REINFORCED) REQUIRED ALONG ALL PROPERTY BOUNDARIES WHERE SITE DRAINS TOWARD THE BOUNDARY
	STACKED HAY BALES STORM DRAIN INLET PROTECTION TYPICAL, REQUIRED AT ALL INLETS AND STORM PIPE OPENINGS (SEE NOTE E.5.)
	STABILIZED STONE CONSTRUCTION EXIT DRIVE (SEE NOTE E.2.)
	BRUSH DIKE
	TEMPORARY STORM DRAIN TO DIVERT RUNOFF TO SEDIMENT BASIN



BRUSH DIKE & SEDIMENT BASIN DETAIL

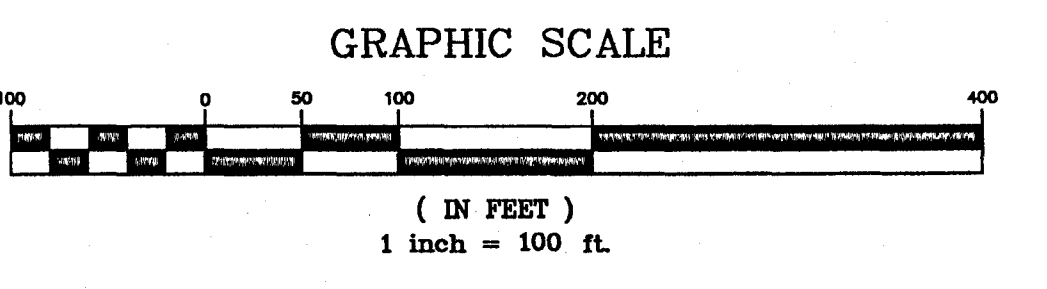
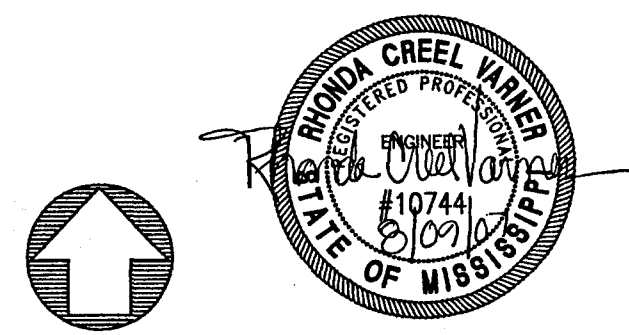
NOT TO SCALE

- NOTES:**
- 1. SEDIMENT BASINS SHALL HAVE DEBRIS REMOVED ONCE THE BASIN IS FIFTY PERCENT (50%) FULL.
 - 2. BRUSH DIKE SEDIMENT BASINS WILL BE MAINTAINED UNTIL SUBSTANTIALLY ALL UPSLOPE AREAS ARE PAVED OR PERMANENT GRASS HAS BEEN ESTABLISHED.
 - 3. ALL PIPE SHOWN ARE PERMANENT DRAINAGE STRUCTURES TO BE CLEARED AS A PART OF POST CONSTRUCTION PROCEDURE.

GENERAL NOTES:

- 1. CONTOUR LINES SHOWN INDICATE EXISTING GROUND ELEVATIONS. CONTOUR INTERVAL IS ONE (1) FOOT. THE DATUM USED IS NATIONAL GEODETIC VERTICAL DATUM (NGVD) 1929.
- 2. THIS PROPERTY APPEARS TO BE SITUATED IN FLOOD ZONE "X" WHICH IS A AREA DETERMINED TO BE OUTSIDE THE 500-YEAR FLOODPLAIN WHERE BASE FLOOD ELEVATIONS HAVE BEEN DETERMINED, ACCORDING TO F.I.R.M. MAP NUMBER 28089C0320 D, DATED APRIL 15, 1994.
- 3. TO OBTAIN OVER THE INTERNET THE MS DEQ FORM "MONTHLY INSPECTION REPORT AND CERTIFICATION FORM FOR EROSION CONTROL AND SEDIMENT CONTROLS" AS WELL AS OTHER FORMS AND GUIDANCE MANUALS

- 1. LOG ON TO www.deq.state.ms.us
 - 2. CLICK ON ENVIRONMENTAL PERMITS DIVISION
 - 3. UNDER QUICK LINKS, CLICK ON STORM WATER PERMITS
 - 4. BELOW THE TEXT NARRATIVE, FIND AND CLICK ON LARGE CONSTRUCTION STORM WATER GENERAL PERMITS (5 ACRES OR GREATER) (YOU WILL NEED A CROBAT READER)
- THE INSPECTION REPORT FORM IS PAGE 11.



REVISED PER CITY OF RIDGELAND COMMENTS ON 08/06/07	DATE: 08/09/07
BY: [Signature]	DATE: [Signature]

**HARBOUR POINTE
A DEVELOPMENT OF
LAKE HARBOUR CROSSING INVESTMENTS, LLC**

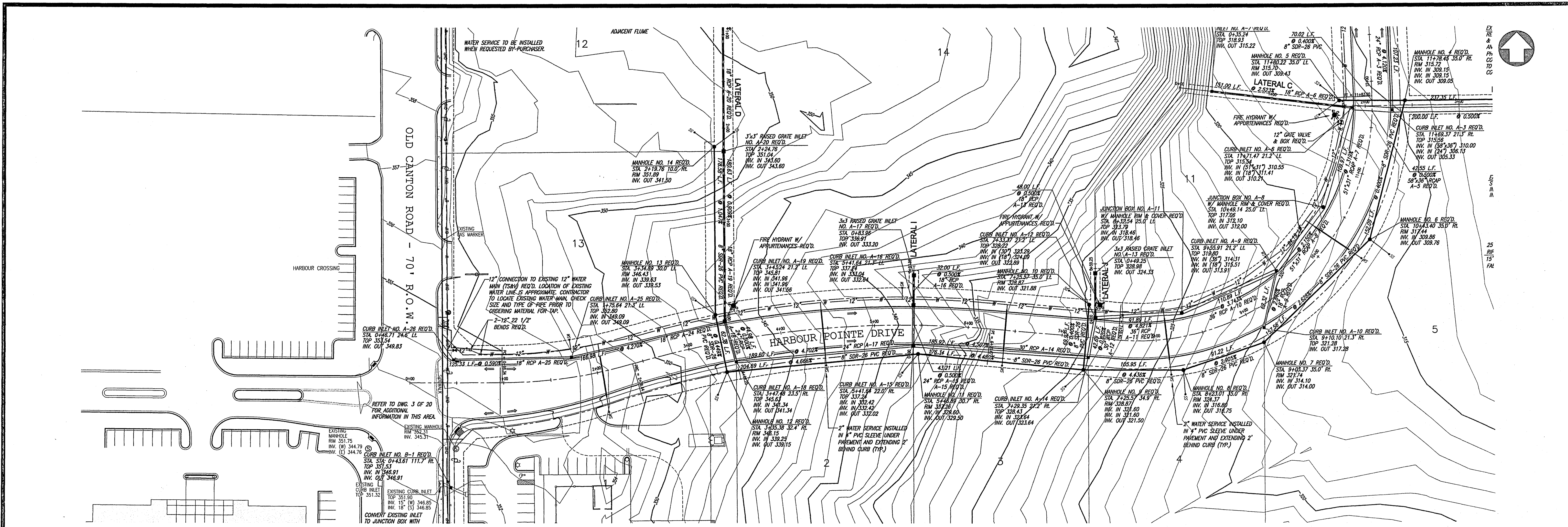
**STORM WATER POLLUTION
PREVENTION PLAN**

**CITY OF RIDGELAND
MADISON COUNTY, MISSISSIPPI**

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DRWN: G.B.B.	DATE: 01/26/07
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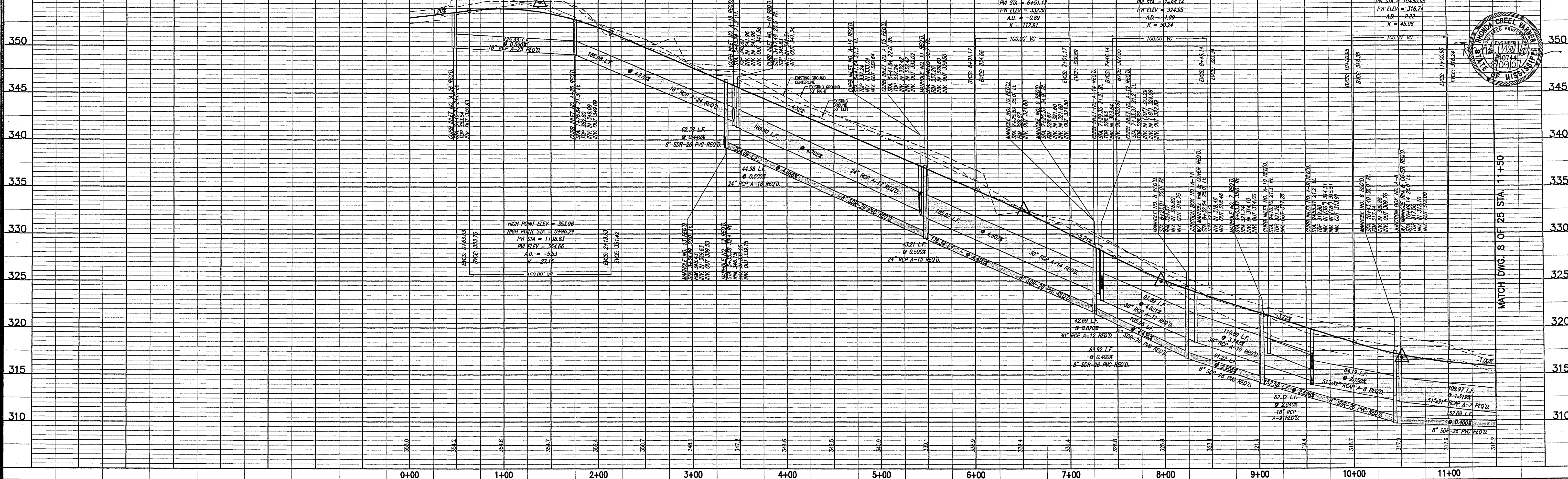
**STERLING
Consultants**

DRAWING NO. **6 OF 25**



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REVISION	BY	DATE
REVISED PER CITY OF RIDGELAND COMMENTS ON 08/06/07	EDP	08/20/07

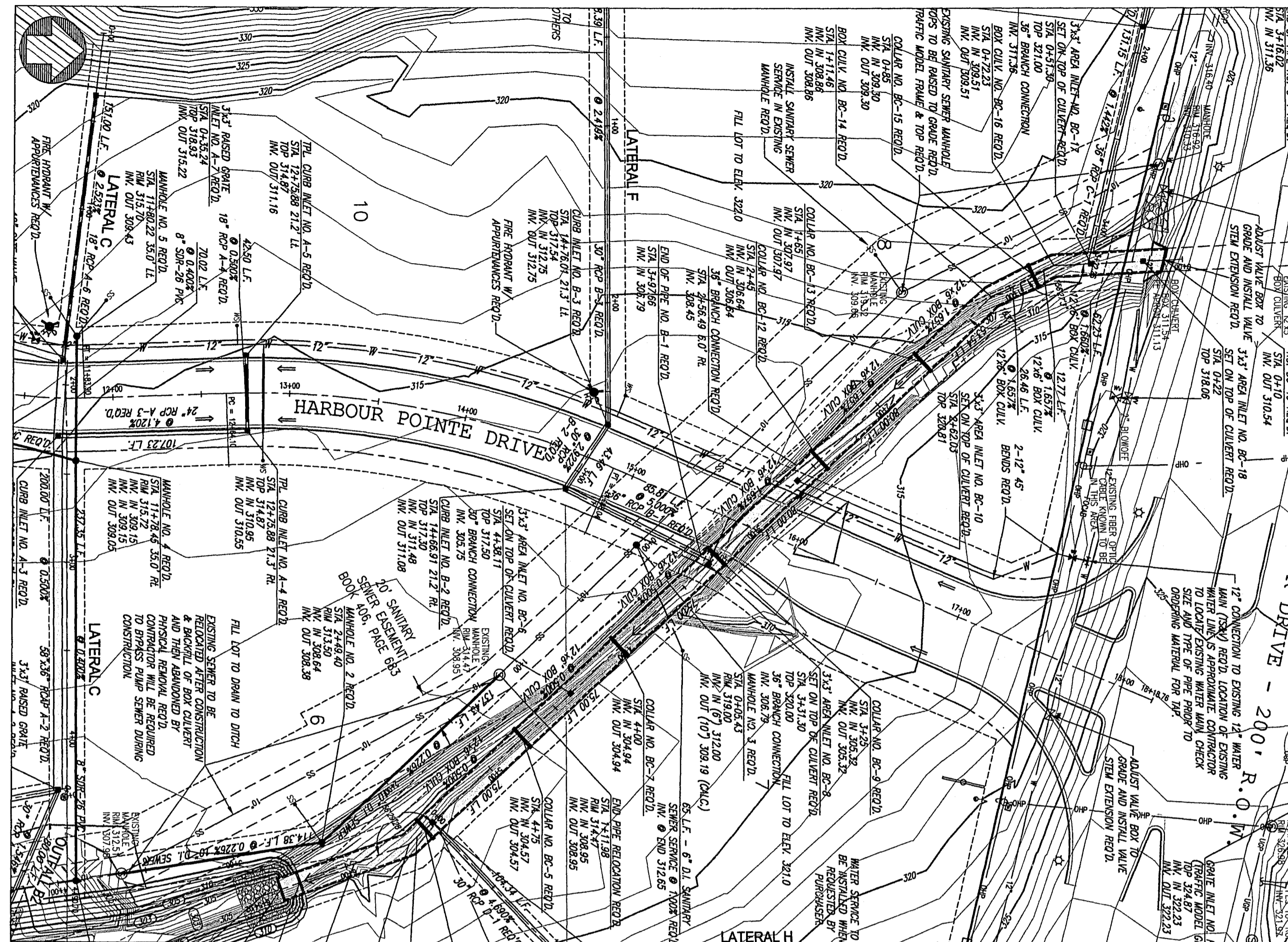


HARBOUR POINTE
CITY OF RIDGELAND
MADISON COUNTY, MISSISSIPPI

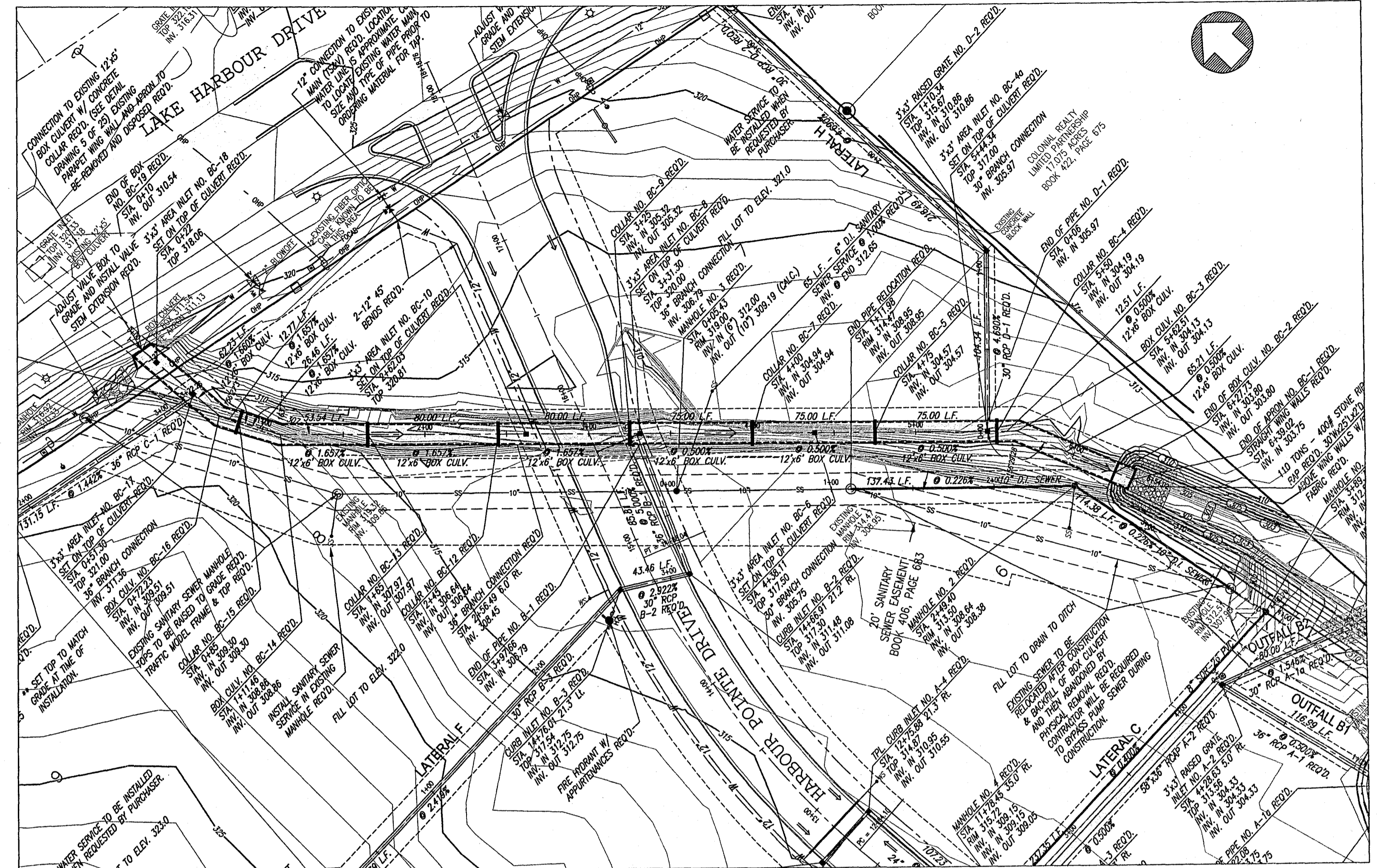
PLAN AND PROFILE - HARBOUR POINT DRIVE STA. 0+00 - STA. 11+50

Prepared For:
LAKE HARBOUR CROSSING INVESTMENTS, LLC
MADISON COUNTY, MISSISSIPPI

Designed By: REV	DATE: 07/26/07		Drawing No.
Drawn By: EDP	DATE: 07/26/07		7 of 25
Checked By: REV	DATE: 07/26/07		
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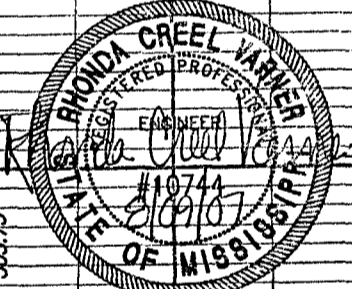
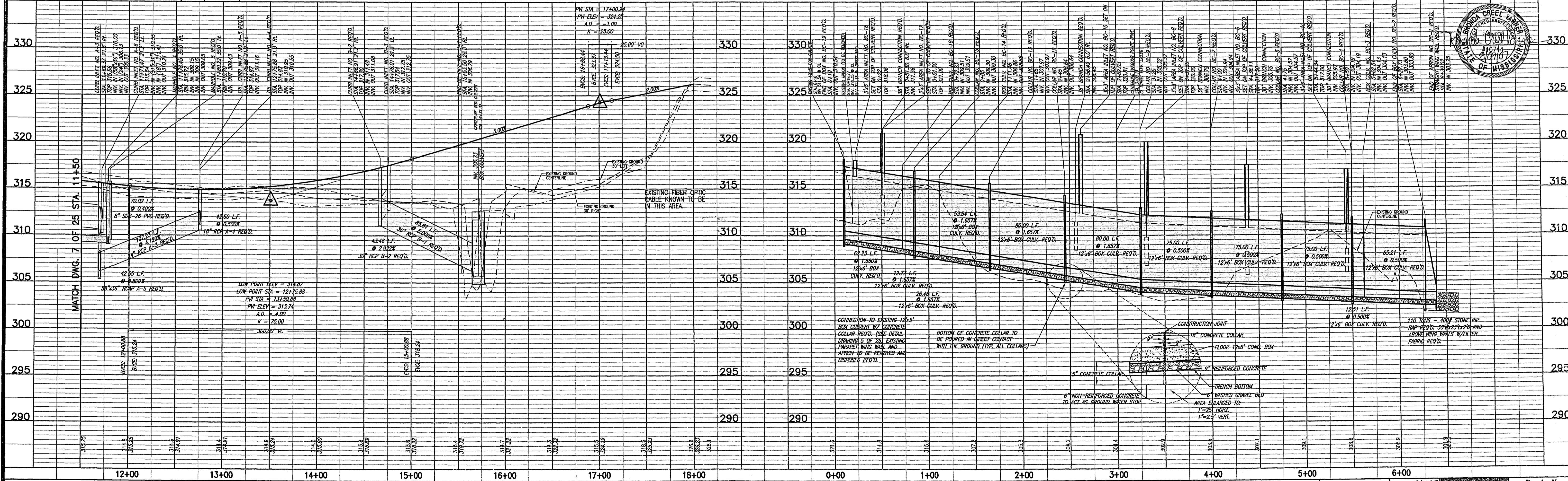
HARBOUR POINTE DRIVE



BOX CULVERT

SCALE: 1" = 50' HORIZ.
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REVISION	BY	DATE
REVISED PER CITY OF RIDGELAND COMMENTS ON 08/06/07	GDP	08/29/07



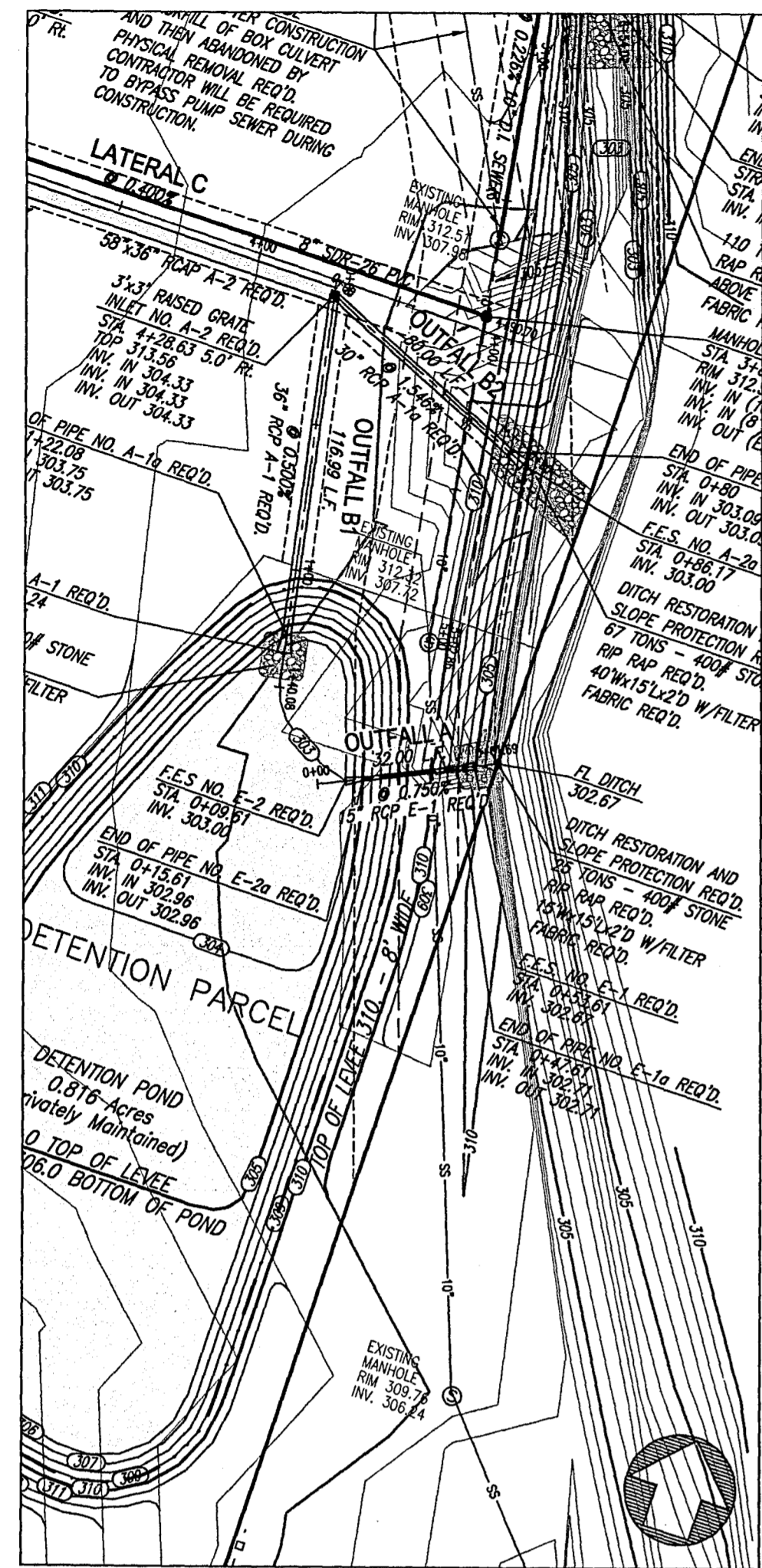
HARBOUR POINTE
CITY OF RIDGELAND
MADISON COUNTY, MISSISSIPPI

PLAN AND PROFILE - HARBOUR POINTE DRIVE STA. 11+50 - STA. 18+18.76
PLAN AND PROFILE - BOX CULVERT STA. 0+00 - STA. 6+54.02

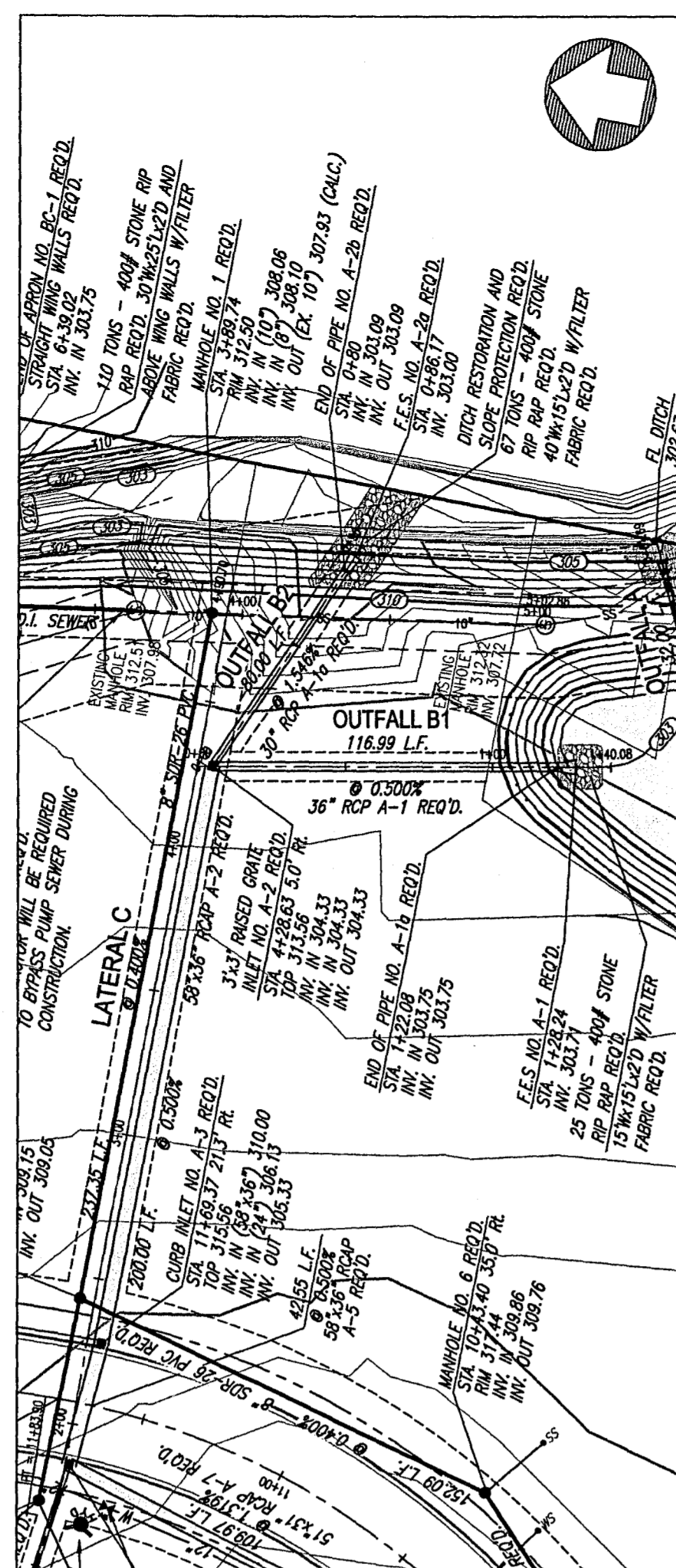
Designed For:
LAKE HARBOUR CROSSING INVESTMENTS, LLC
MADISON COUNTY, MISSISSIPPI

Designed By: RGV DATE: 01/26/07
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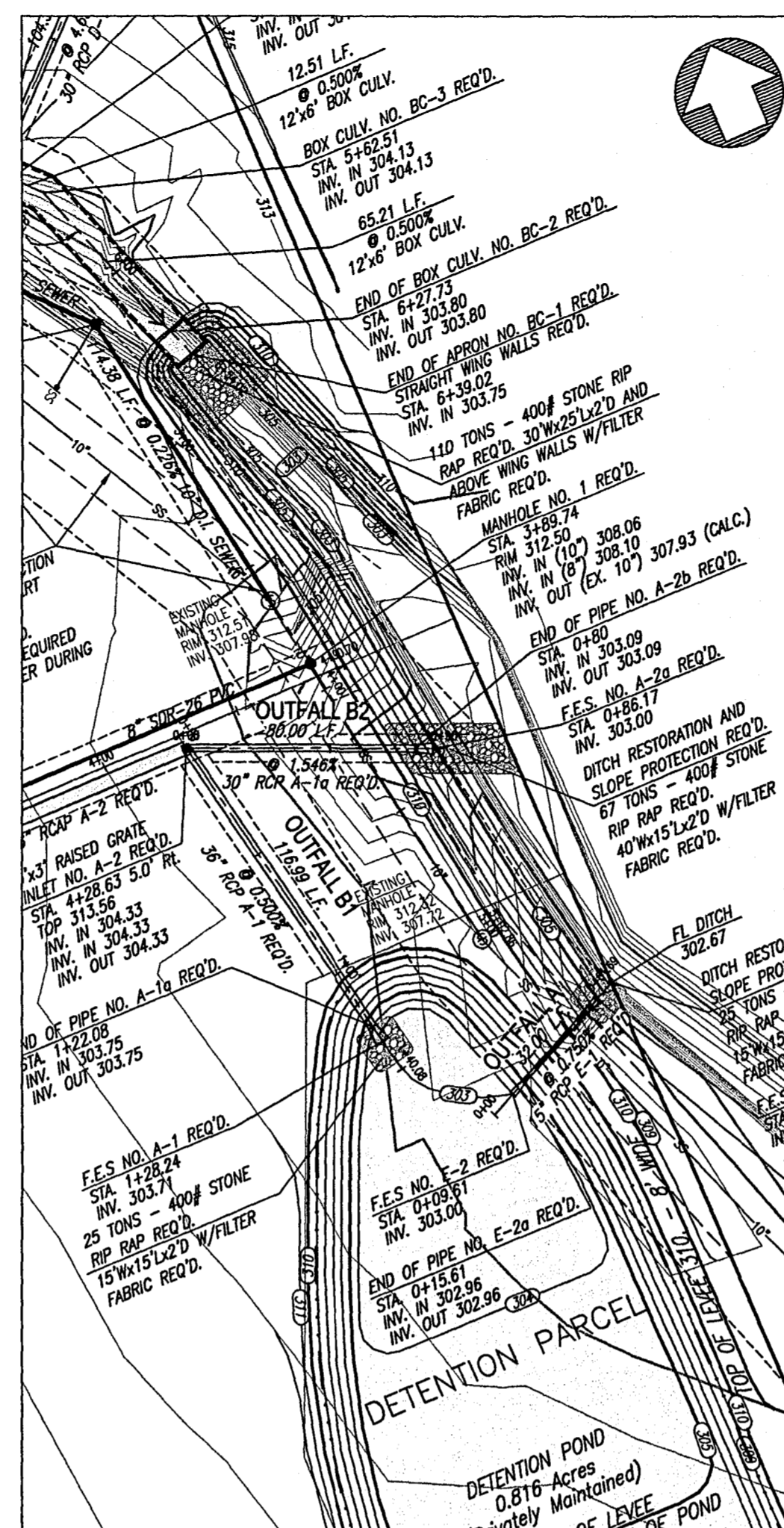
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8 of 25



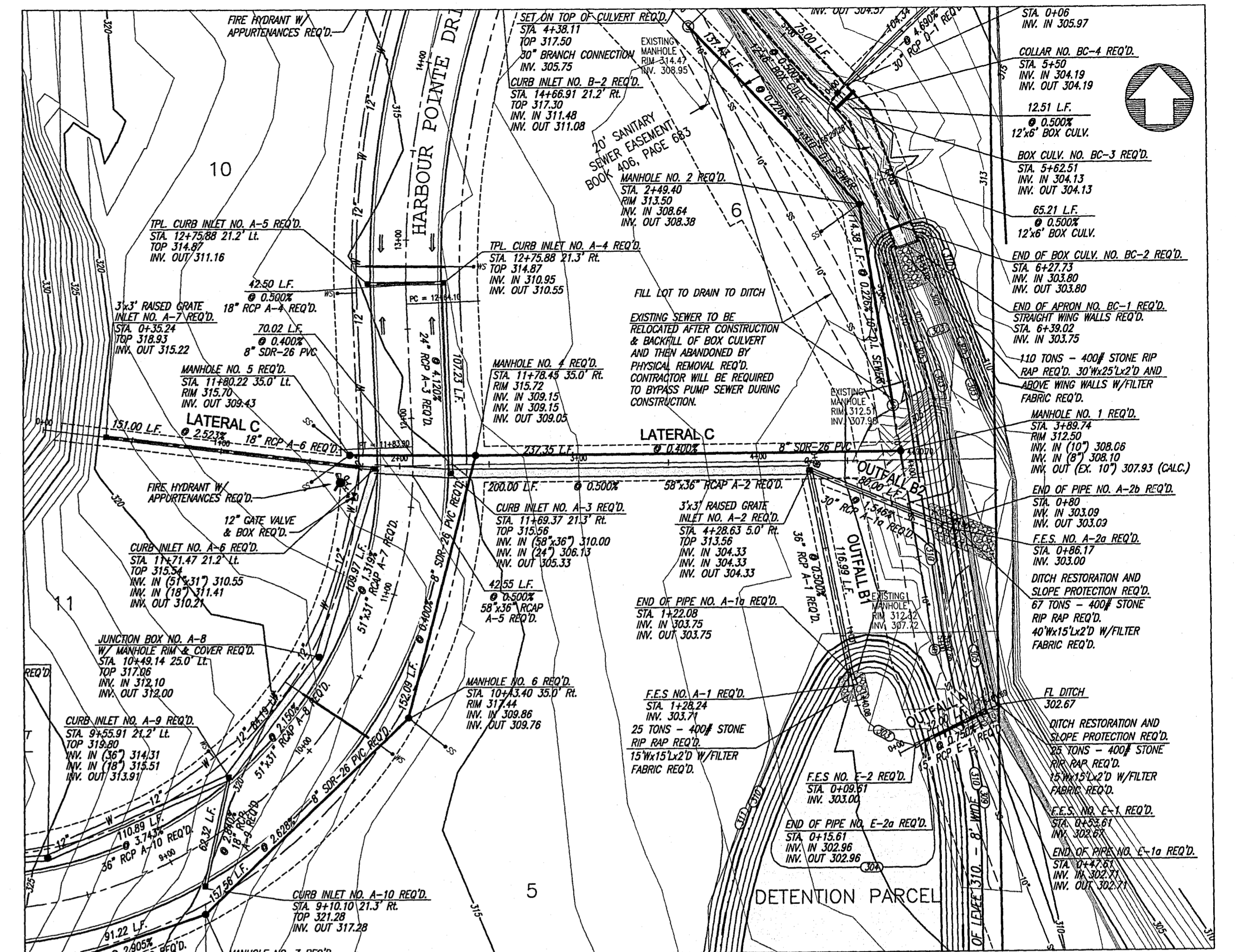
OUTFALL A



OUTFALL B1



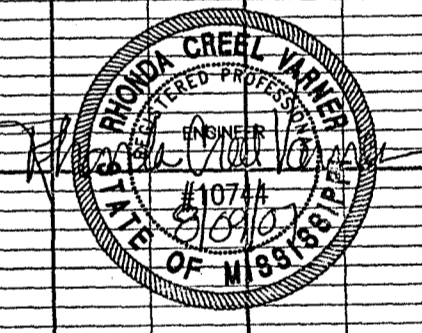
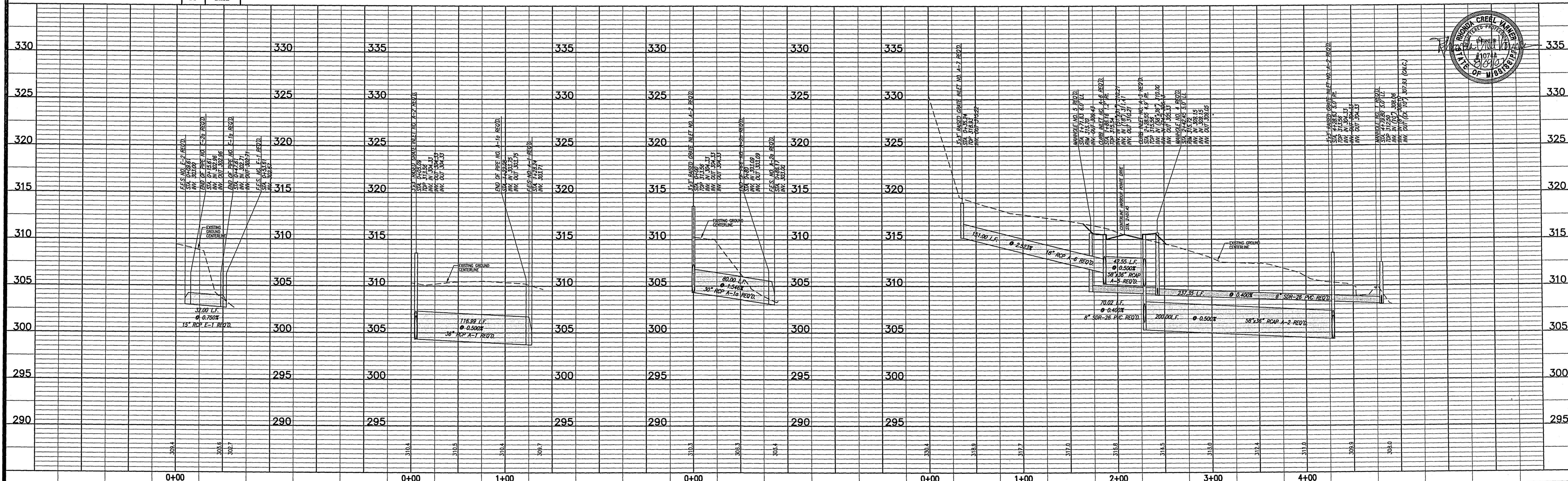
OUTFALL B2



LATERAL C

REVISION	BY	DATE
REVISED PER CITY OF RIDGELAND COMMENTS ON 08/06/07	BDP	08/20/07

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.



HARBOUR POINTE
CITY OF RIDGELAND
MADISON COUNTY, MISSISSIPPI

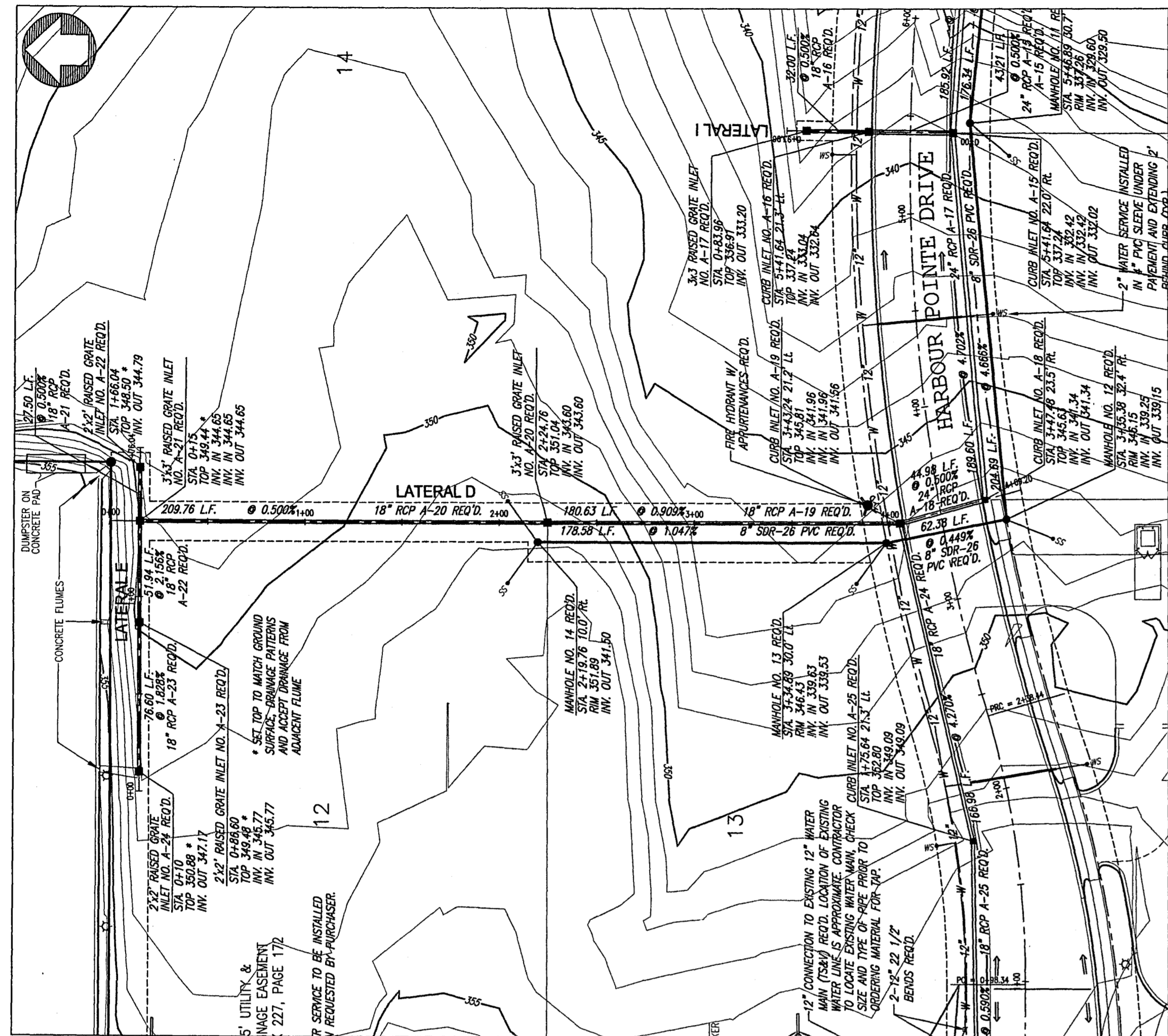
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PLAN AND PROFILE - OUTFALL B1 STA. 0+00 - STA. 1+40.08
PLAN AND PROFILE - OUTFALL B2 STA. 0+00 - STA. 0+90
PLAN AND PROFILE - LATERAL C STA. 0+00 - STA. 4+90.70

Prepared For:
LAKE HARBOUR CROSSING INVESTMENTS, LLC
MADISON COUNTY, MISSISSIPPI

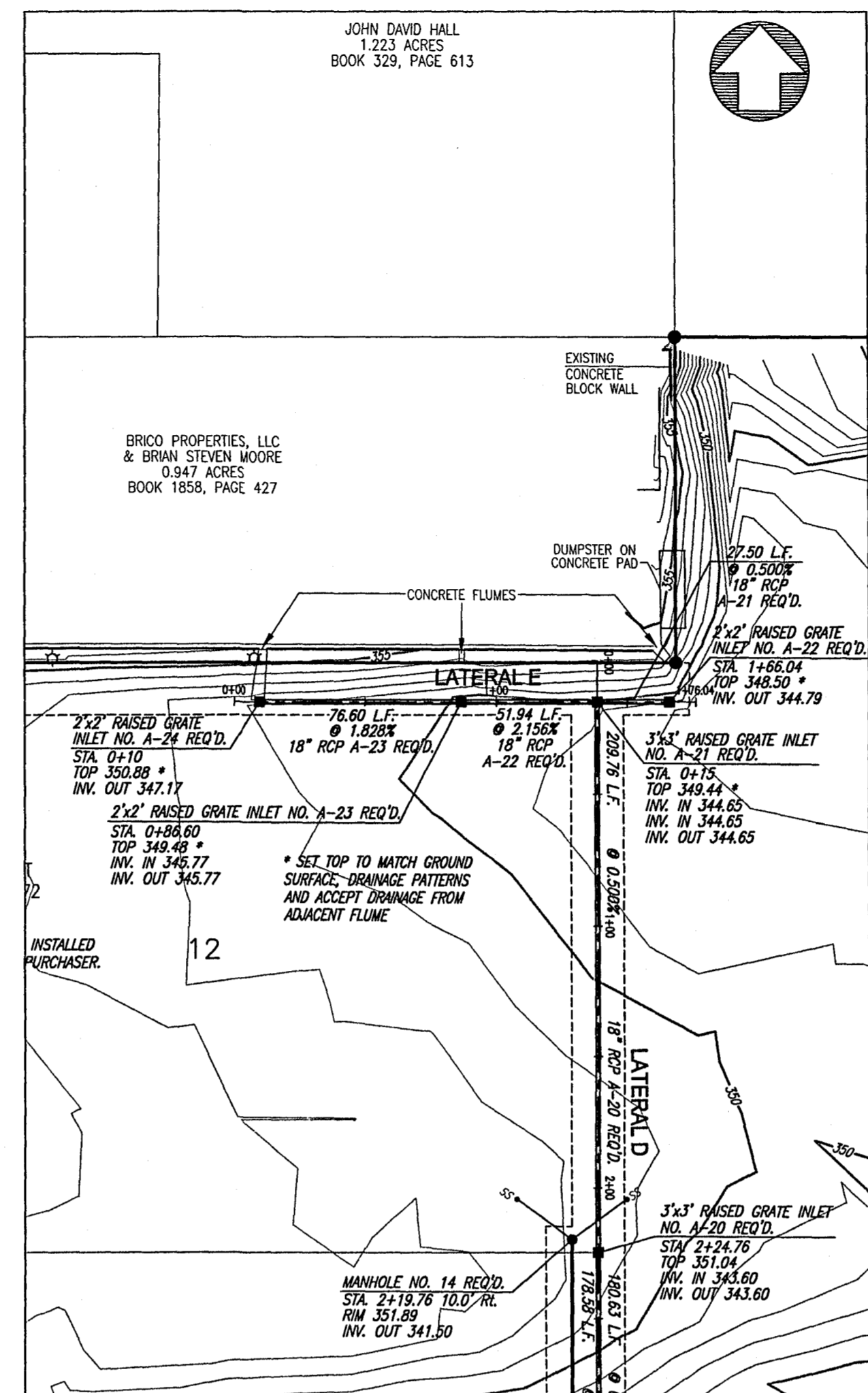
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BDP		07/24/07

Drawing No.
9 of 25

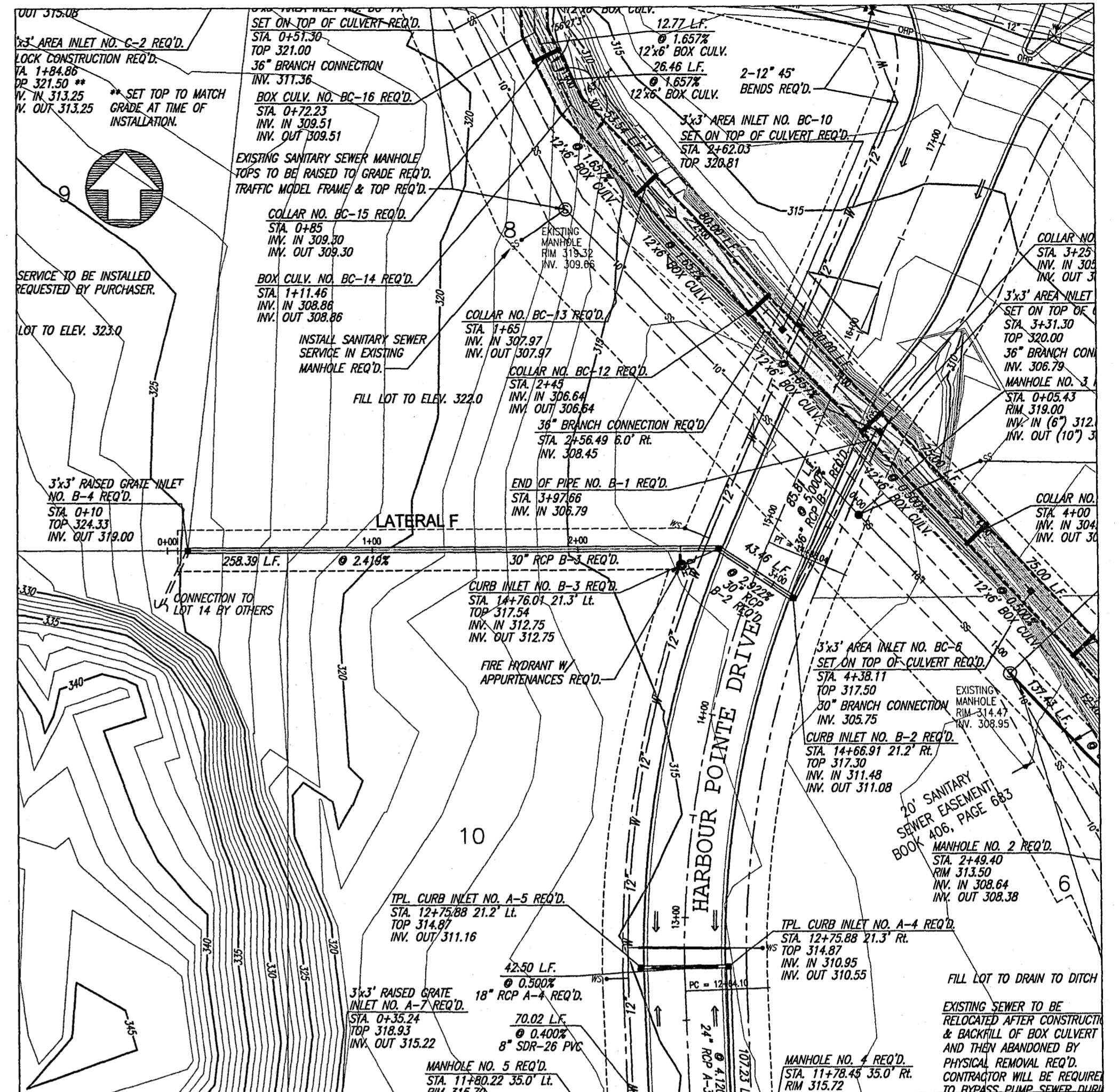
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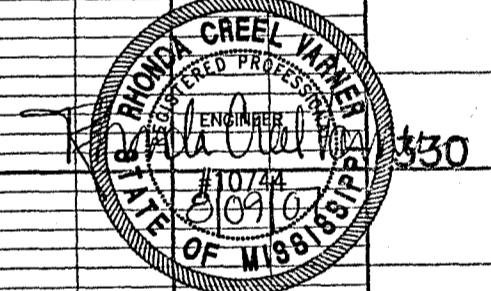
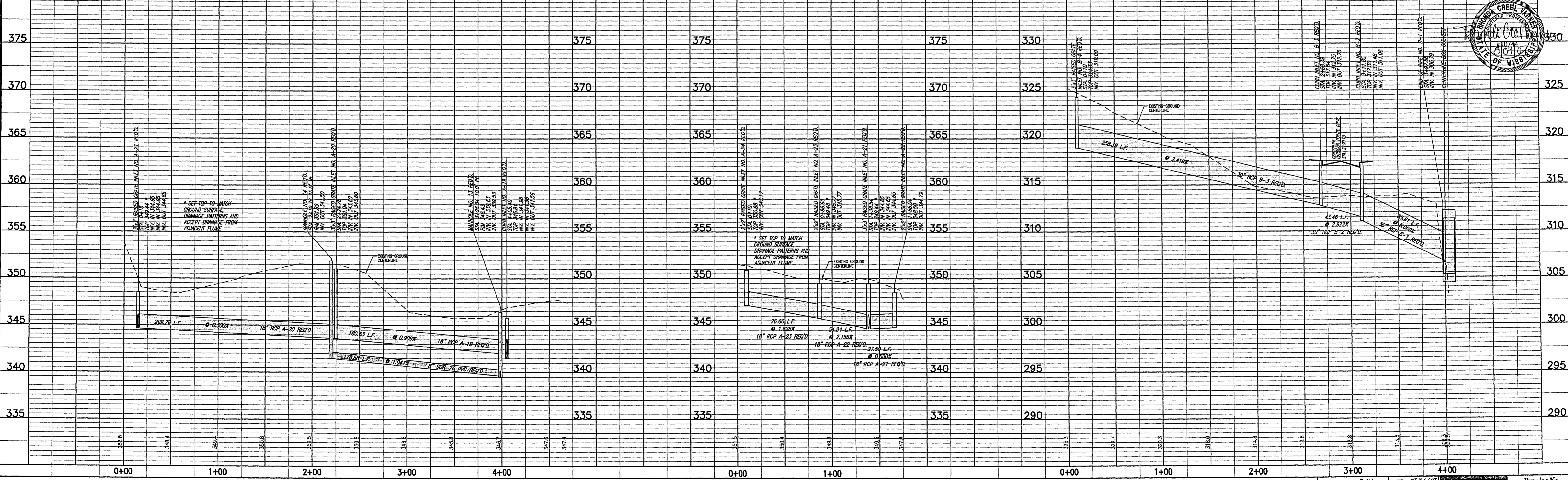
LATERAL E



LATERAL F

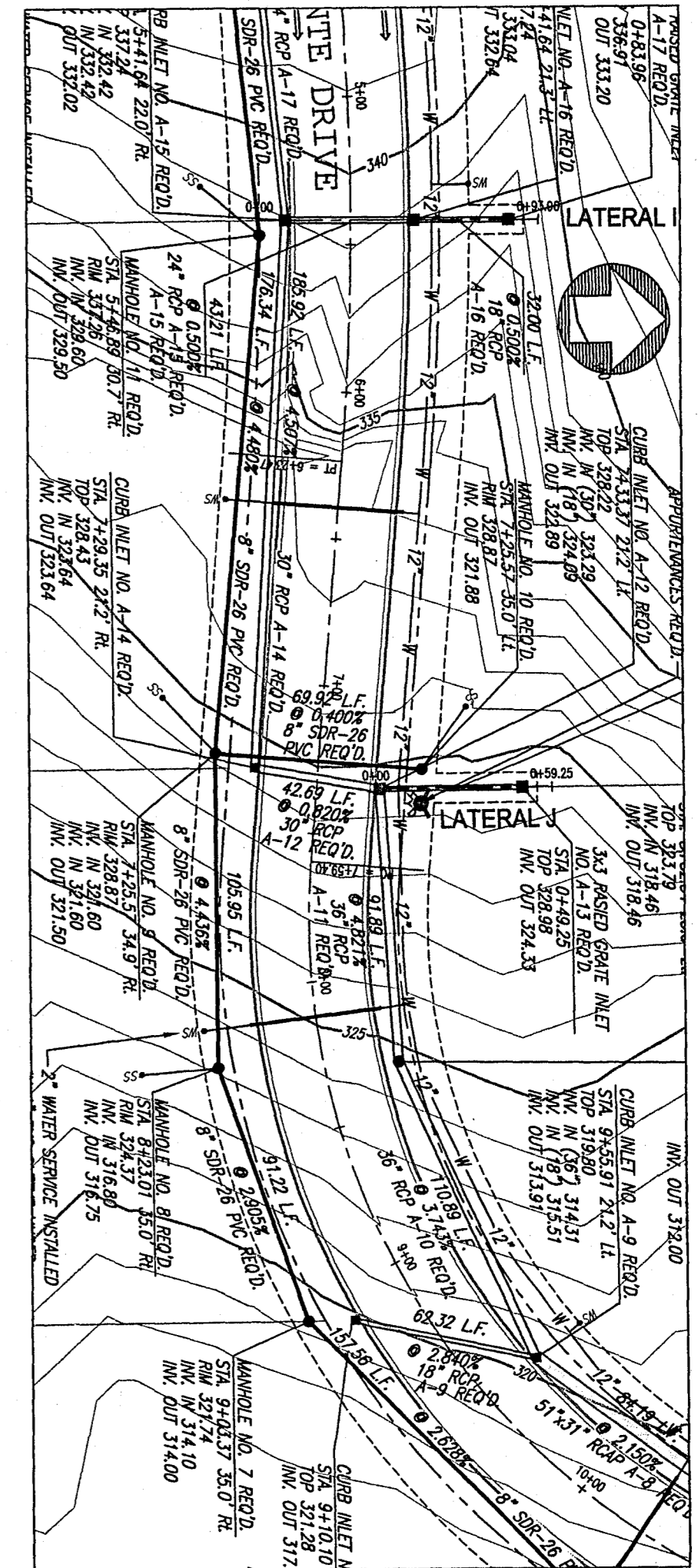
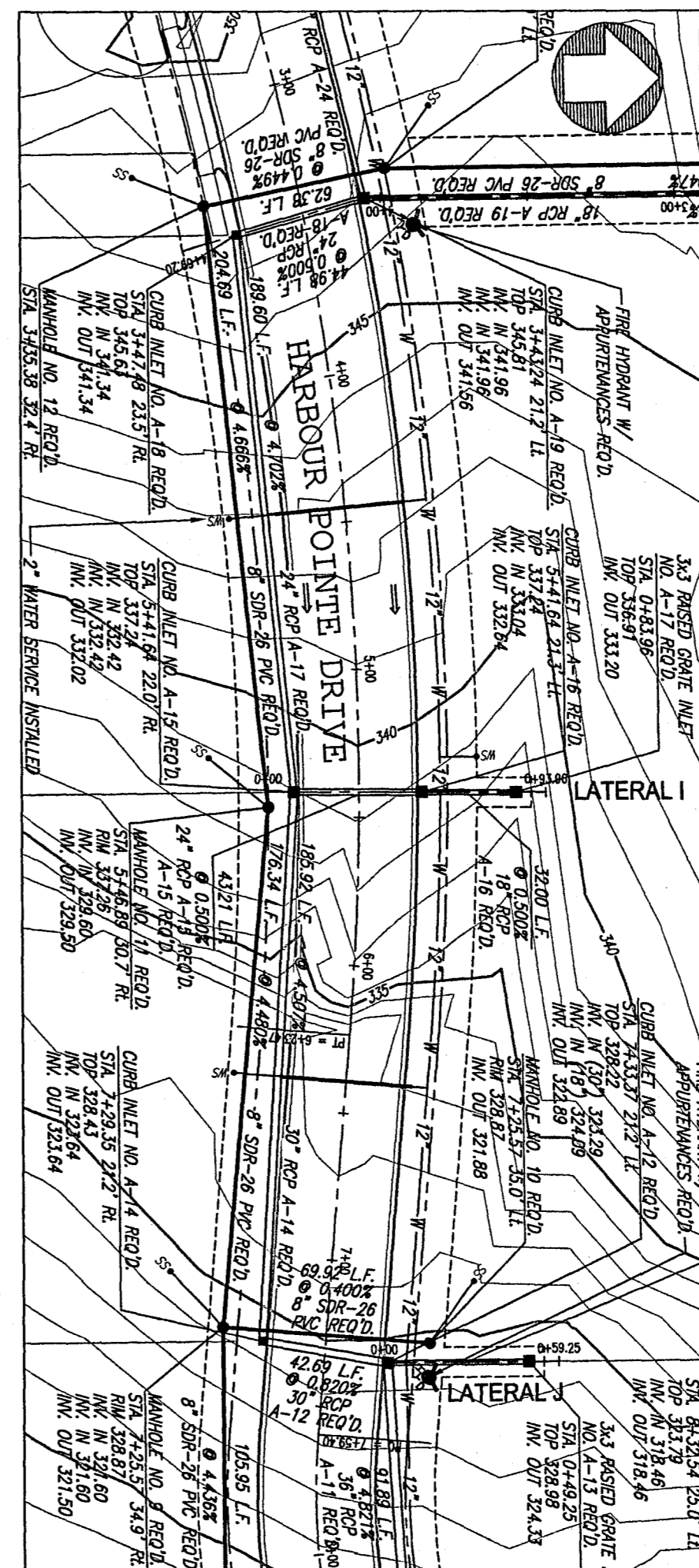
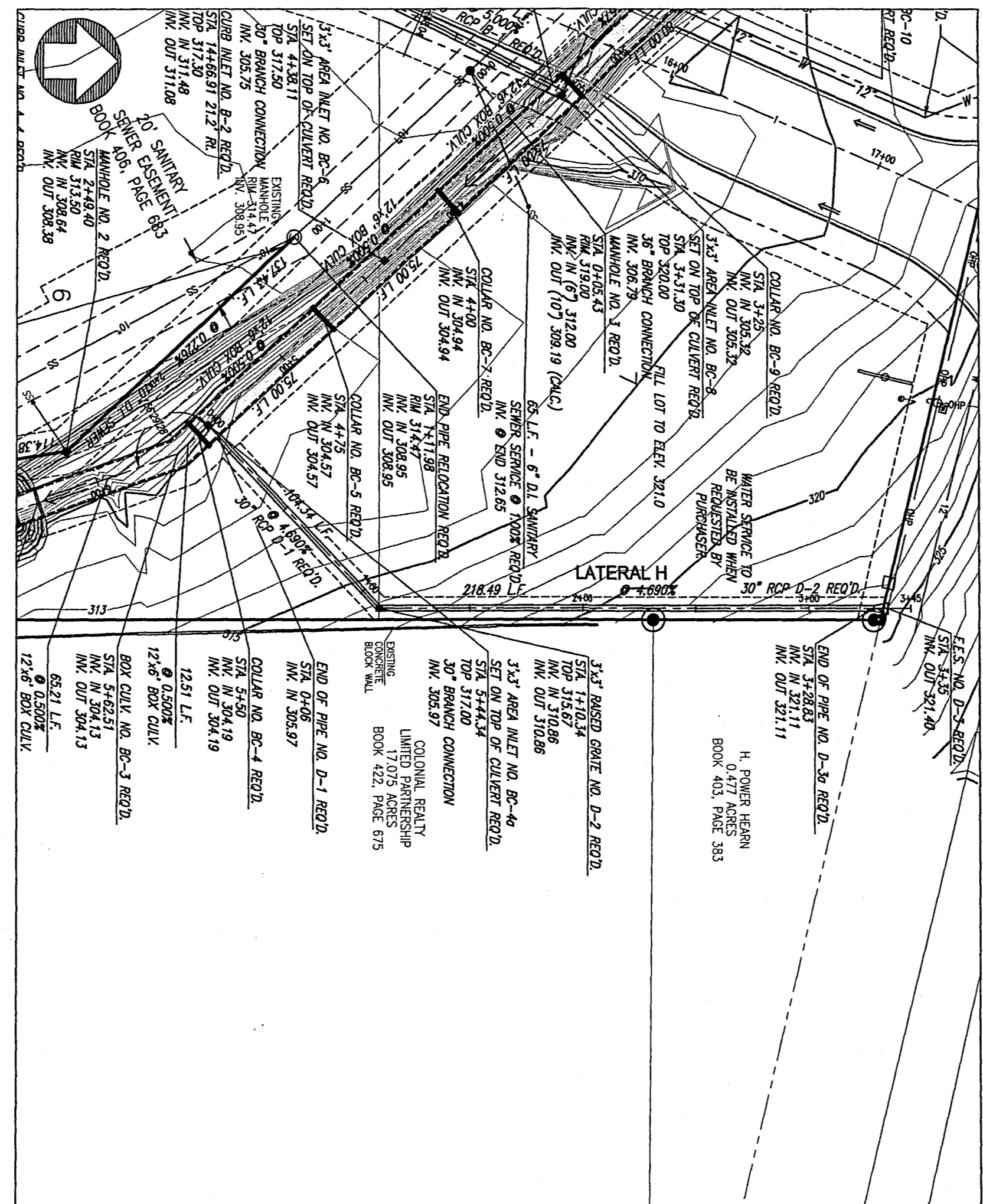
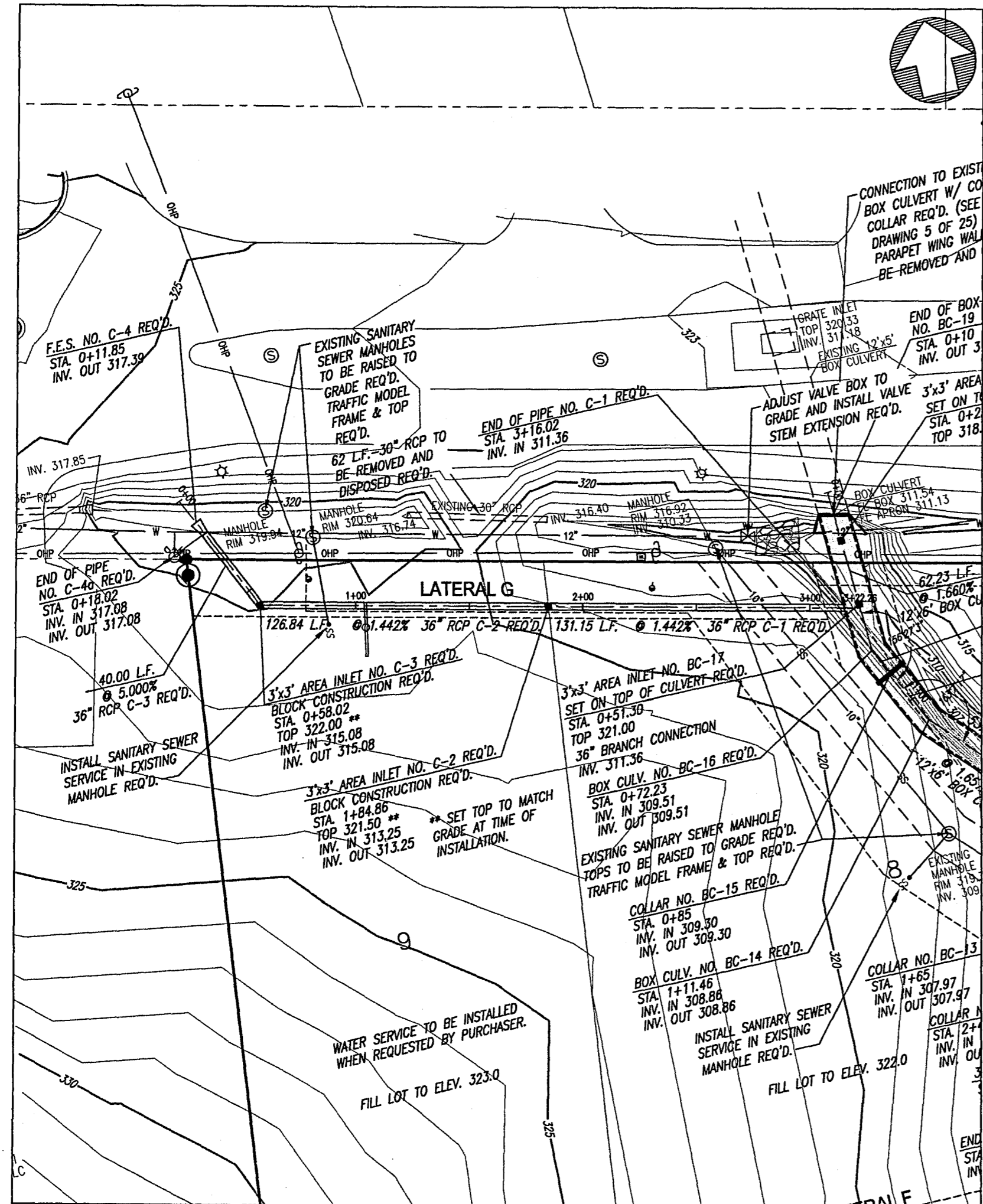
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REVISED PER CITY OF RIDGELAND COMMENTS ON 08/06/07	GPB	08/29/07

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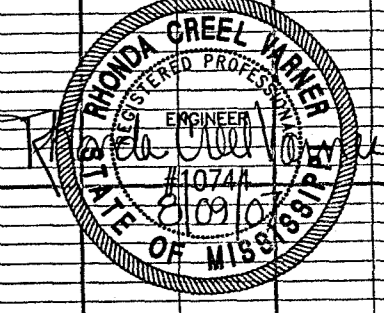
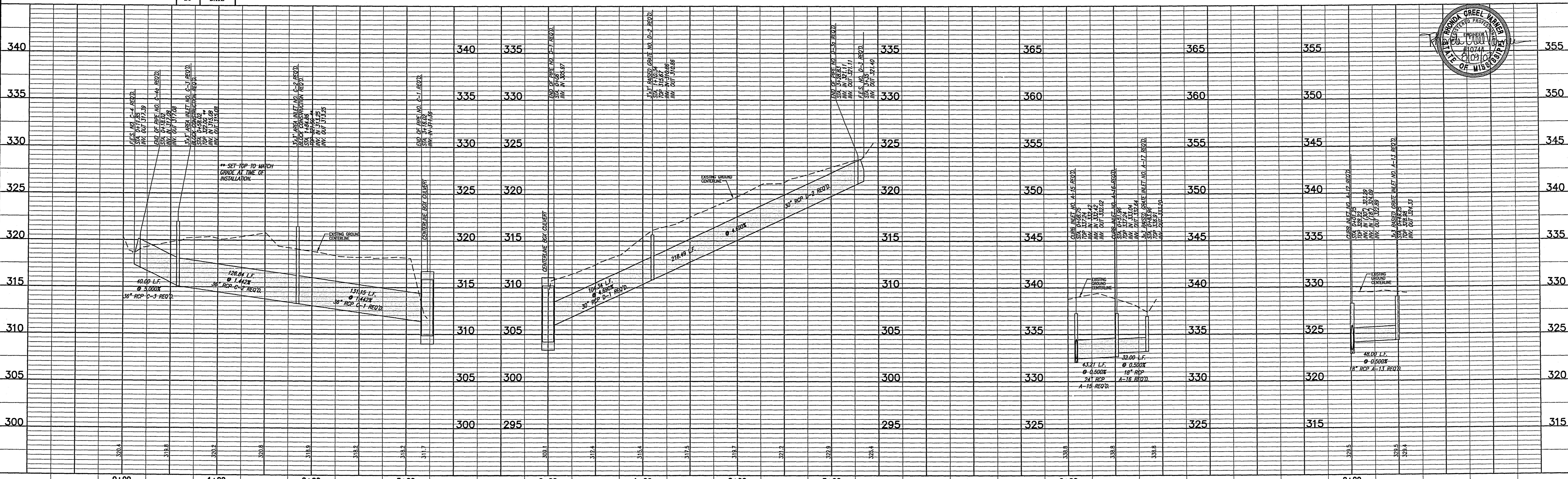
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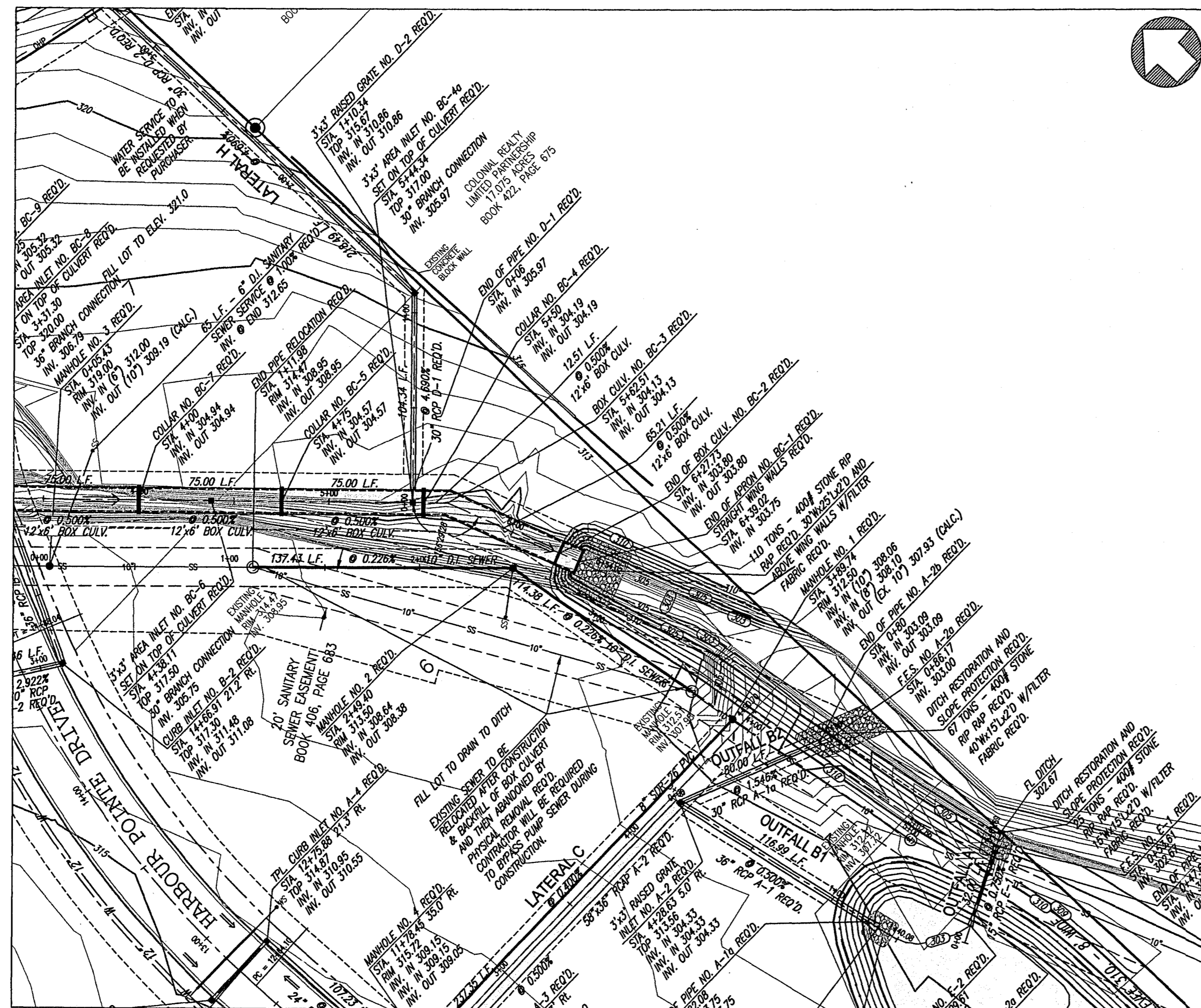


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REVISED PER CITY OF RIDGELAND COMMENTS ON 08/06/07	DDP	08/07/07

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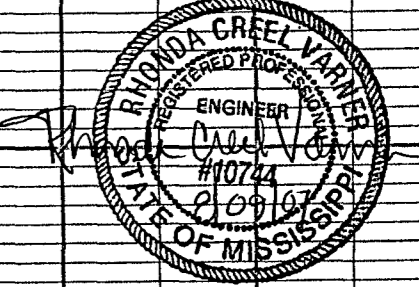
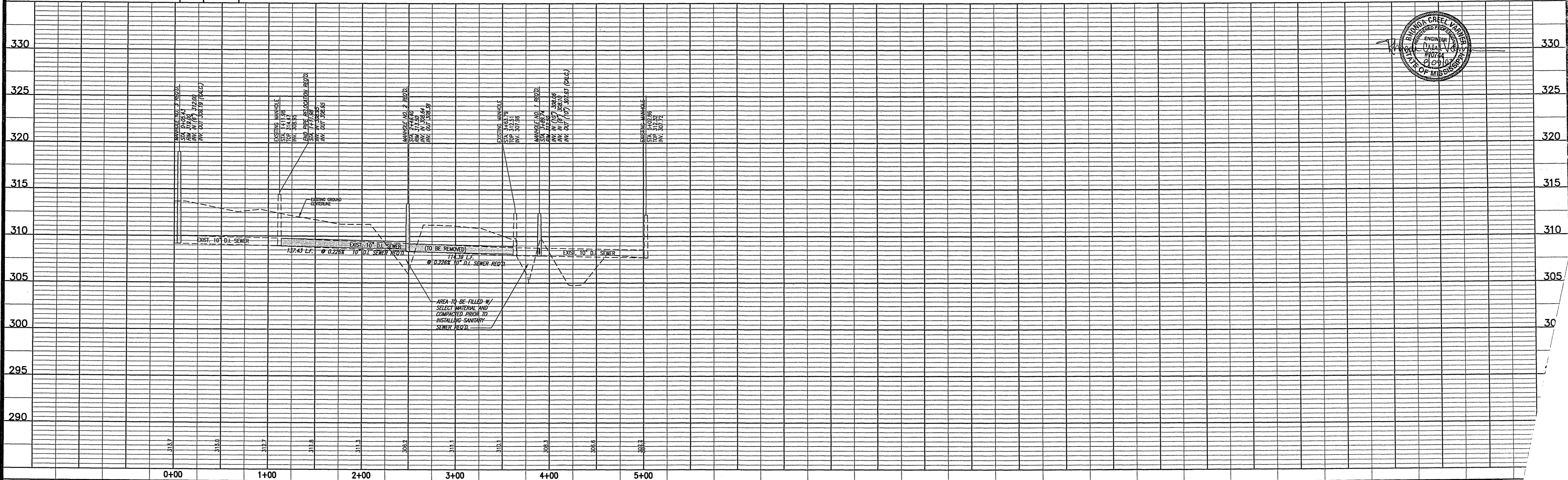
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RELOCATION 10" SANITARY SEWER MAIN

SCALE: 1" = 50' HORIZ.
1" = 5' VERT.

REVISION	BY	DATE
REVISD PER CITY OF RIDGELAND COMMENTS ON 08/06/07	ODD	01/24/07



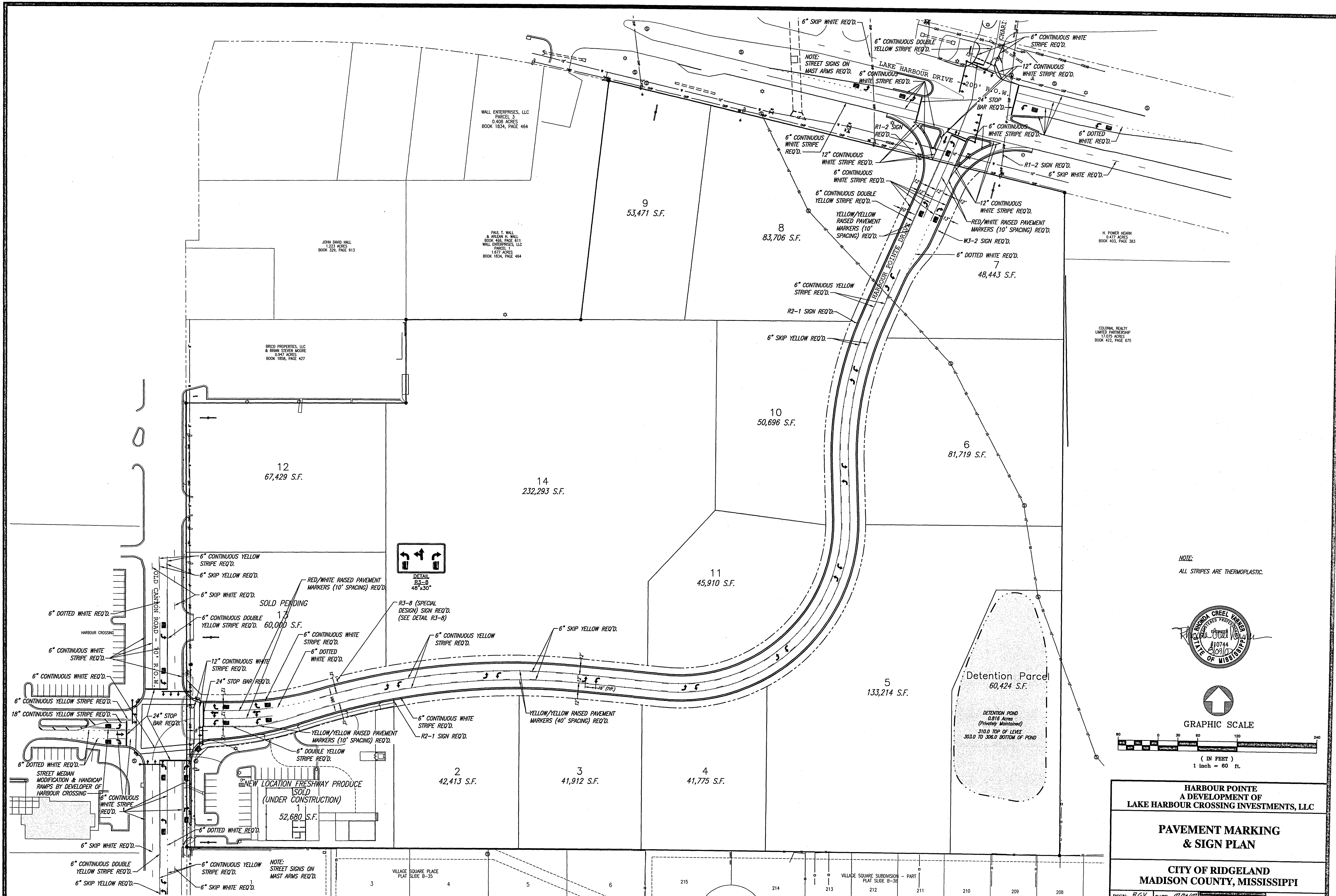
HARBOR POINTE
CITY OF RIDGELAND
MADISON COUNTY, MISSISSIPPI

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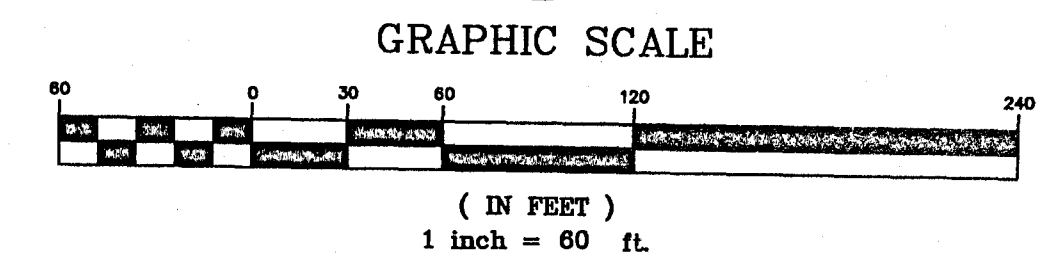
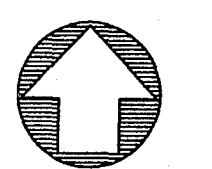
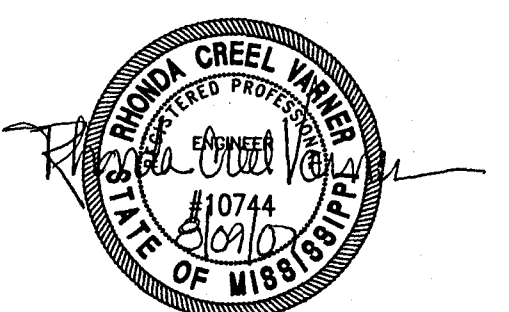
Prepared For:
LAKE HARBOR CROSSING INVESTMENTS, LLC
MADISON COUNTY, MISSISSIPPI

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Drawn By:	ODD	DATE:	01/24/07
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NOTE:
ALL STRIPES ARE THERMOPLASTIC.



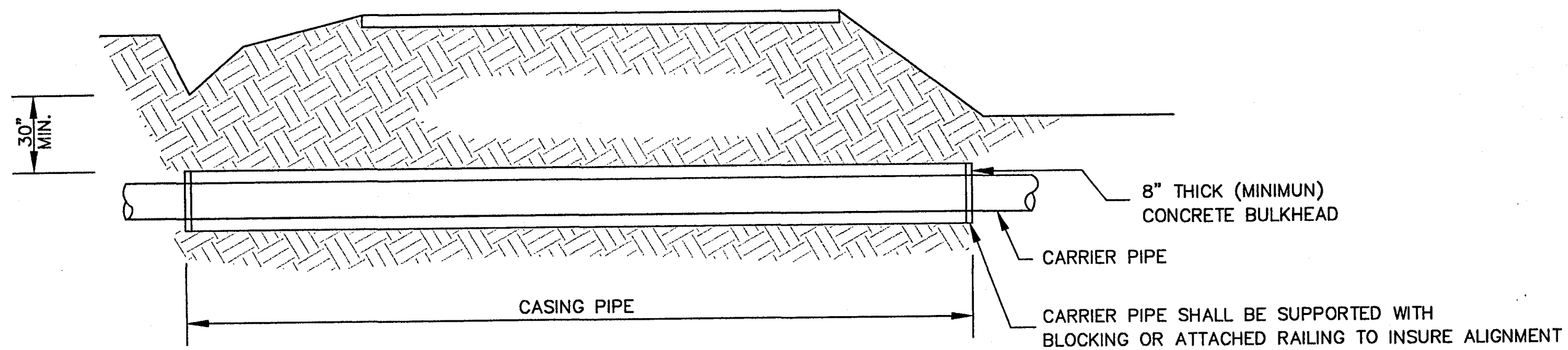
HARBOUR POINTE
A DEVELOPMENT OF
LAKE HARBOUR CROSSING INVESTMENTS, LLC

**PAVEMENT MARKING
& SIGN PLAN**

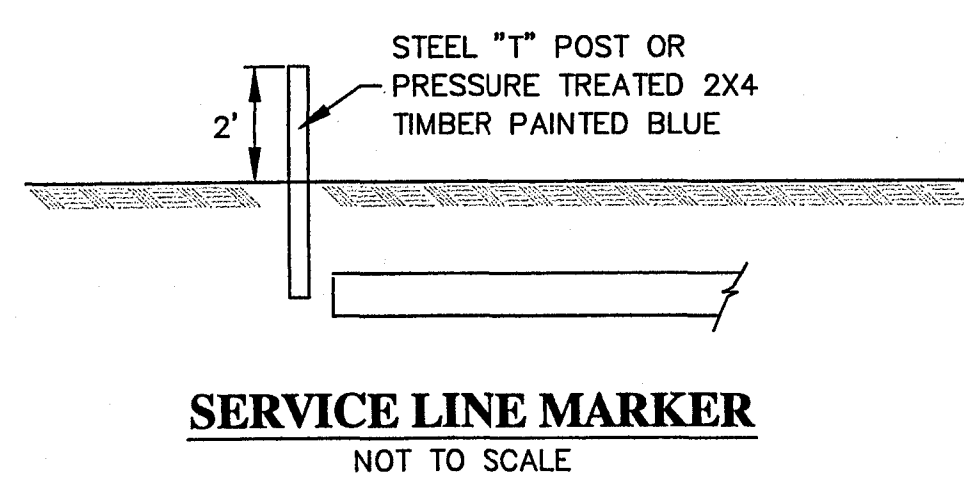
CITY OF RIDGELAND
MADISON COUNTY, MISSISSIPPI

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CHKD: R.C.V.	DATE: 07/24/07		
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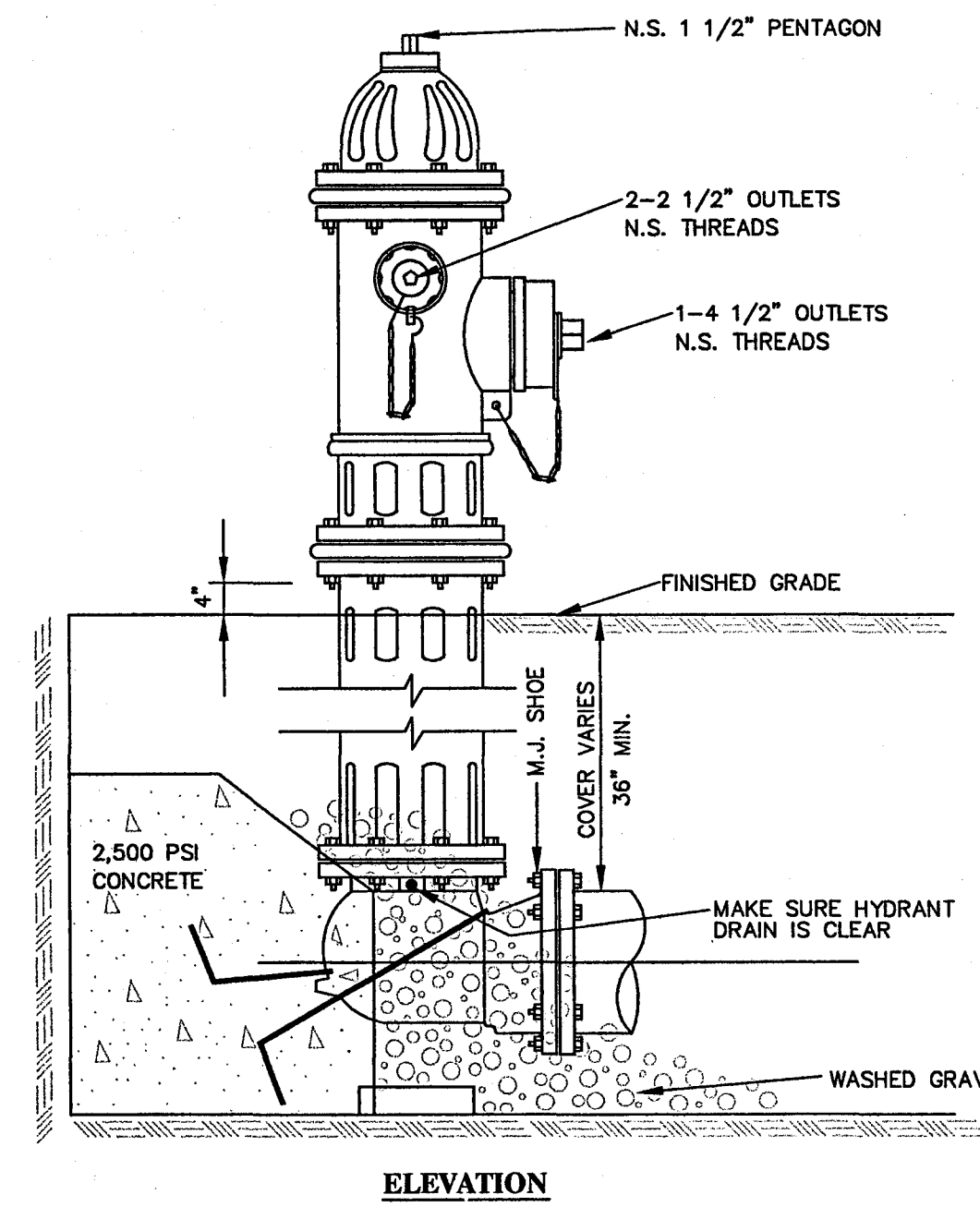
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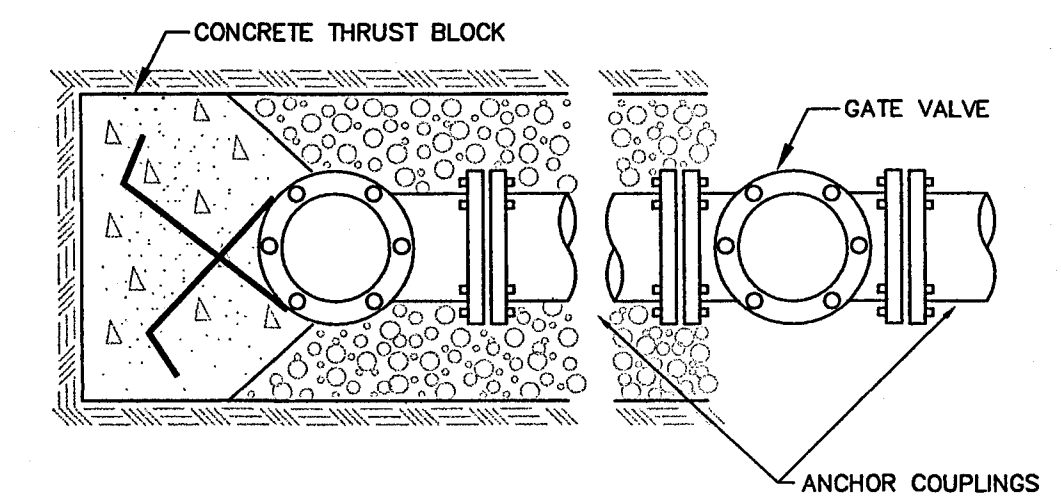
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NOT TO SCALE



SERVICE LINE MARKER
NOT TO SCALE



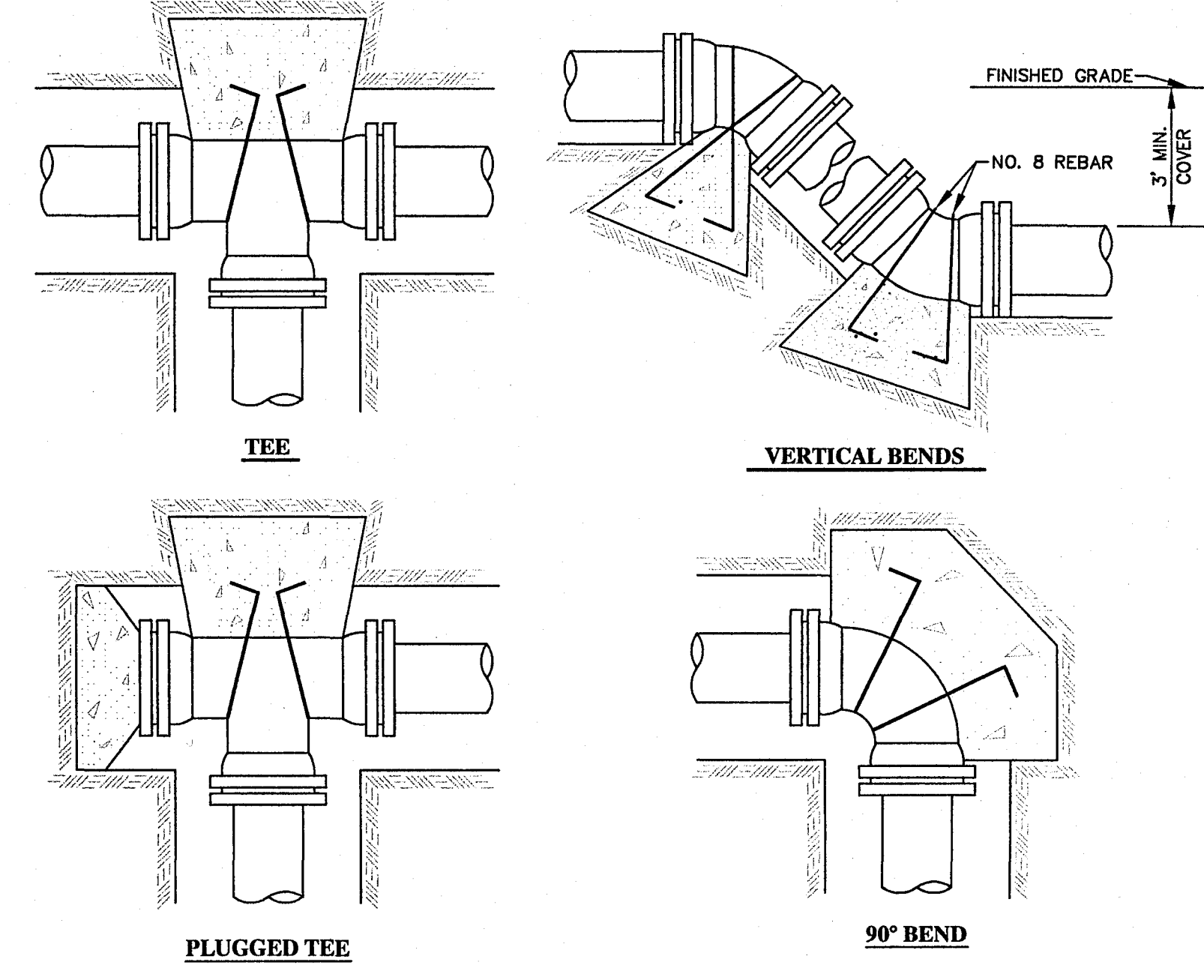
ELEVATION



PLAN

TYPICAL FIRE HYDRANT INSTALLATION
NOT TO SCALE

- NOTES:**
- GATE VALVES WILL BE REQUIRED ON ALL FIRE HYDRANT LEGS.
 - TWO ANCHOR COUPLINGS REQUIRED ON ALL FIRE HYDRANTS.

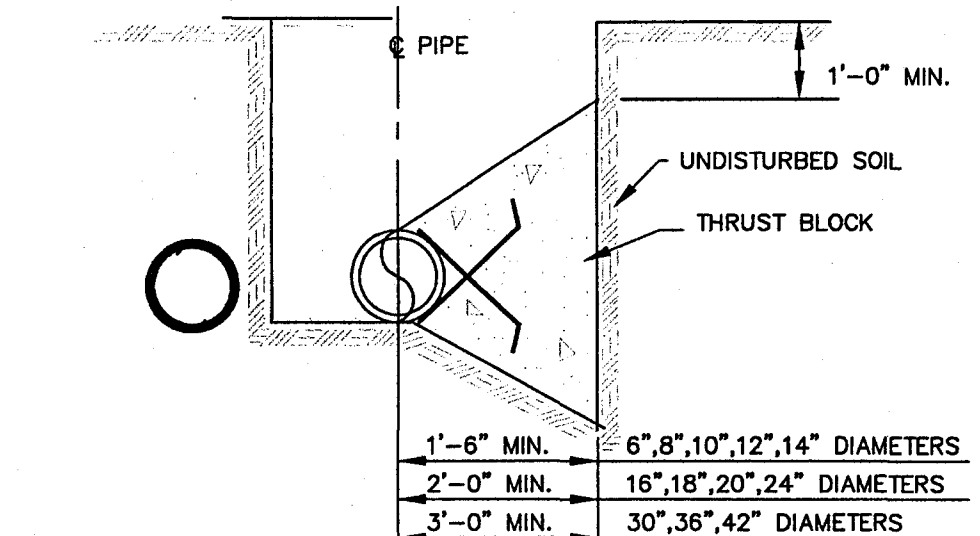


TEE

PLUGGED TEE

VERTICAL BENDS

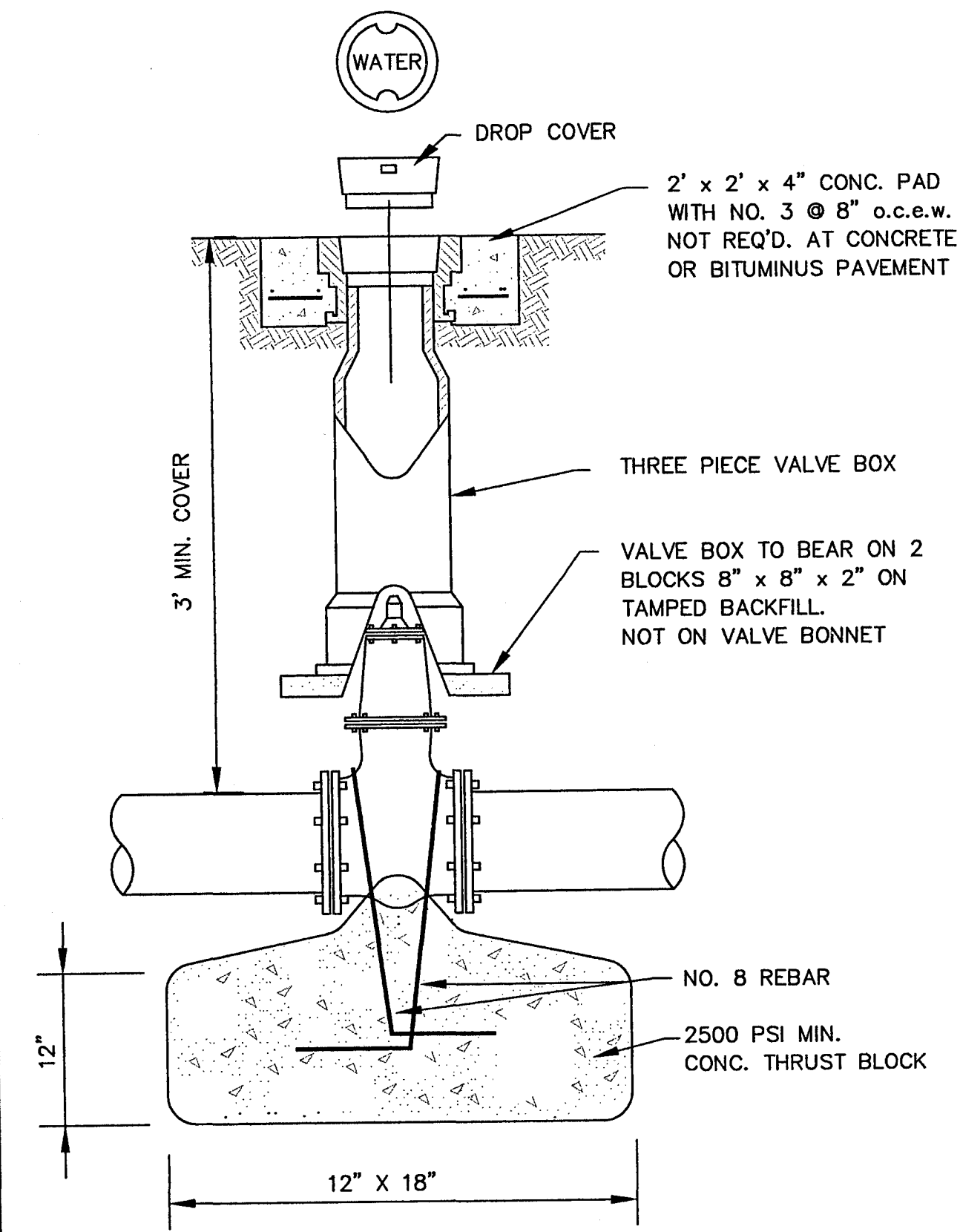
90° BEND



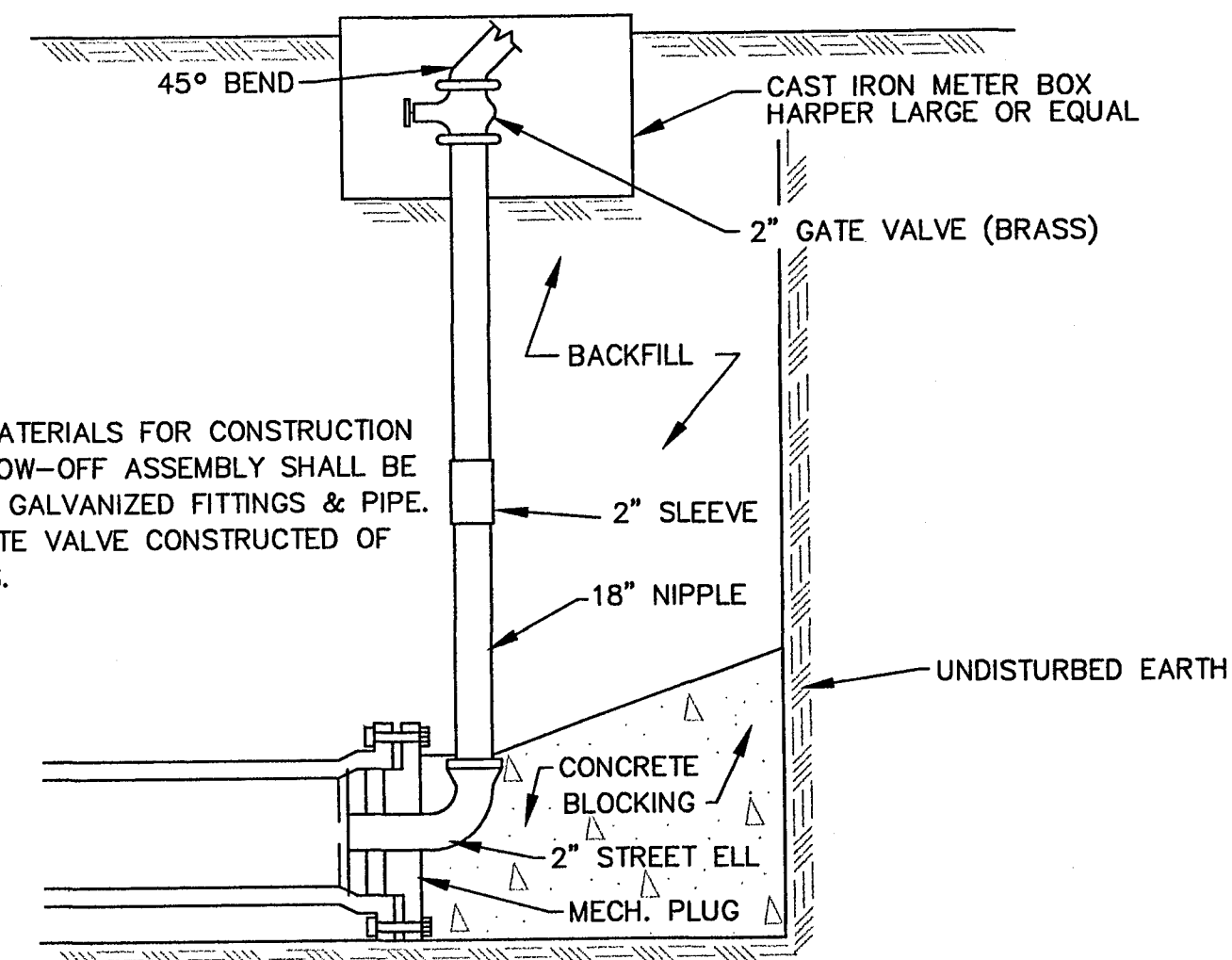
TYPICAL CROSS SECTION

TYPICAL THRUST BLOCKING IN WATER MAINS AND SEWAGE FORCE MAINS
NOT TO SCALE

- NOTE:** ALL THRUST BLOCKS 2,500 PSI CONCRETE AGAINST UNDISTURBED EARTH



GATE VALVE DETAIL
NOT TO SCALE



TYPICAL BLOW-OFF ASSEMBLY
NOT TO SCALE

- NOTE:**
ALL MATERIALS FOR CONSTRUCTION OF BLOW-OFF ASSEMBLY SHALL BE OF 2" GALVANIZED FITTINGS & PIPE. 2" GATE VALVE CONSTRUCTED OF BRASS.

PIPE SIZE "D" (IN.)	TRENCH WIDTH "B" (FT.)	TRENCH VOLUME PER FOOT OF DEPTH (CY/LF)	BEDDING QUANTITIES (CY/LF)			BACKFILL QUANTITIES (TO ONE FOOT ABOVE TOP OF PIPE) (CY/LF)		
			CLASS C	CLASS B	CLASS A	CLASS C	CLASS B	CLASS A
4	2.50	0.074	0.054	0.053	0.048	0.13	0.12	0.12
6	2.50	0.074	0.056	0.057	0.051	0.15	0.12	0.13
8	2.50	0.093	0.058	0.062	0.054	0.14	0.12	0.14
10	3.00	0.111	0.072	0.081	0.069	0.18	0.16	0.18
12	3.50	0.130	0.085	0.10	0.087	0.22	0.19	0.22
15	3.75	0.139	0.098	0.12	0.10	0.25	0.21	0.25
18	4.00	0.148	0.11	0.14	0.12	0.28	0.24	0.27
21	4.25	0.157	0.11	0.17	0.16	0.31	0.28	0.30
24	4.50	0.167	0.13	0.17	0.17	0.34	0.28	0.33
27	4.75	0.176	0.14	0.19	0.20	0.37	0.31	0.36
30	5.00	0.185	0.16	0.21	0.23	0.40	0.33	0.39
33	5.50	0.204	0.18	0.25	0.28	0.46	0.38	0.45
36	5.75	0.213	0.19	0.28	0.31	0.49	0.41	0.48
42	6.25	0.231	0.22	0.33	0.39	0.55	0.46	0.54
48	7.00	0.259	0.26	0.42	0.49	0.66	0.55	0.64
54	7.50	0.278	0.29	0.48	0.58	0.72	0.60	0.71
60	8.00	0.296	0.33	0.55	0.68	0.78	0.66	0.77
66	8.75	0.324	0.37	0.66	0.82	0.90	0.76	0.89
72	9.25	0.343	0.41	0.74	0.90	0.96	0.82	0.96
78	9.75	0.361	0.45	0.82	1.05	1.03	0.89	1.03
84	10.50	0.389	0.50	0.95	1.22	0.16	1.00	1.16

SCHEDULE OF BEDDING AND BACKFILL QUANTITIES

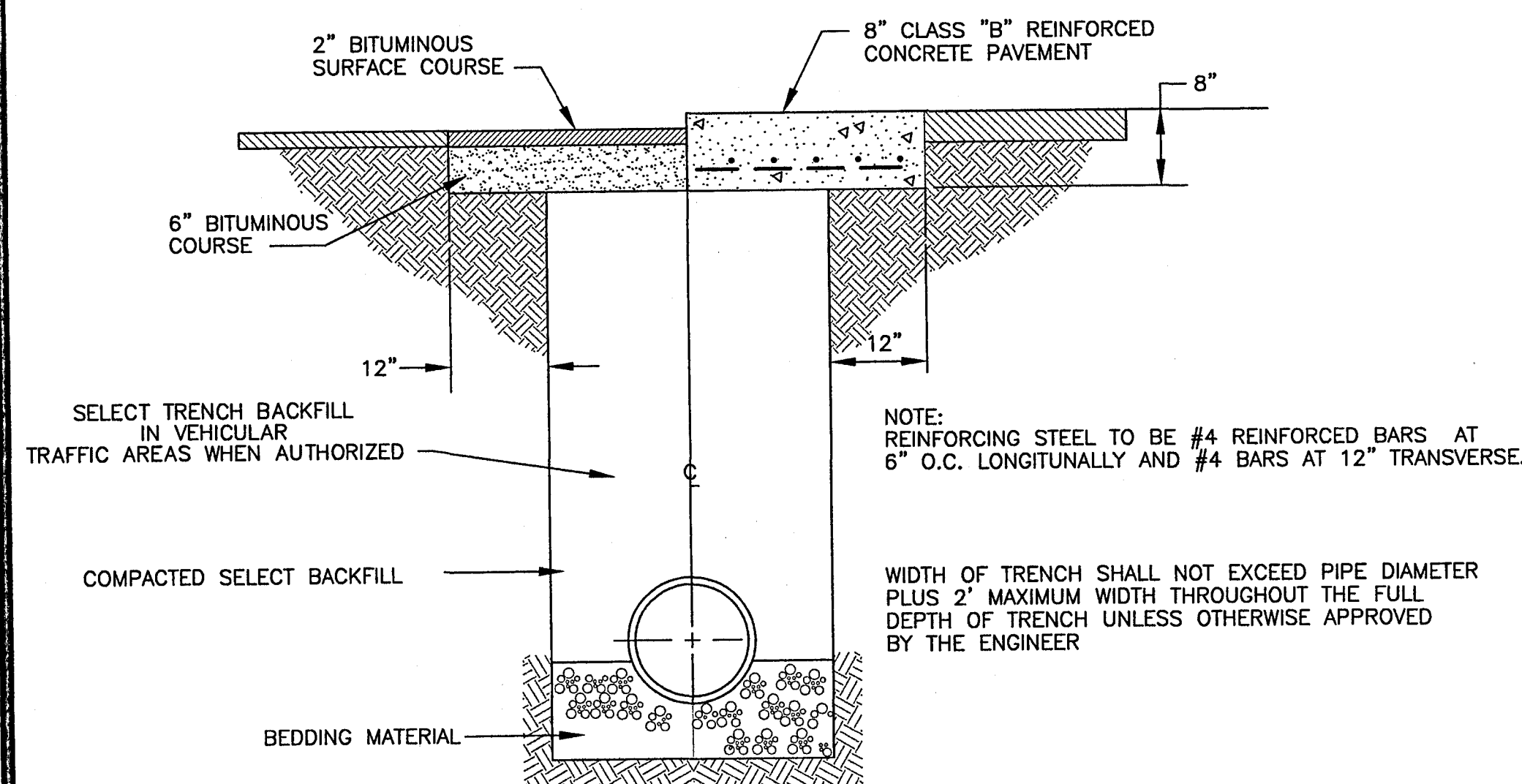
BEARING AREA IN SQ. FT.

NOMINAL PIPE DIAMETER (IN)	DEAD-END OR TEE	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	NOMINAL PIPE DIAMETER (IN)	DEAD-END OR TEE	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
6	2.5	3.0	2.0	2.0	2.0	6	—	—	26.0(1.0)	14.0(5)	7.0(3)
8	4.0	6.0	3.0	2.0	2.0	8	—	—	45.0(1.7)	25.0(9)	13.0(5)
10	6.0	9.0	5.0	2.5	2.0	10	—	—	68.0(2.5)	37.0(1.4)	19.0(7)
12	9.0	11.0	6.0	3.5	2.0	12	—	—	97.0(3.6)	52.0(1.9)	27.0(1.0)
14	12.0	18.0	9.0	5.0	2.5	14	—	—	130(4.8)	70.0(2.6)	36.0(1.3)
16	16.0	22.5	12.0	6.0	3.0	16	—	—	168(6.2)	91.0(3.4)	46.0(1.7)
18	20.0	28.0	15.0	8.0	4.0	18	—	—	211(7.8)	114(4.2)	58.0(2.2)
20	24.5	34.0	19.0	10.0	5.0	20	—	—	259(9.6)	140(5.2)	72.0(2.6)
24	35.0	49.0	27.0	14.0	7.0	24	—	—	370(13.7)	200(7.4)	102(3.8)
30	54.0	76.0	41.0	21.0	10.0	30	—	—	568(21.1)	308(11.4)	156(5.8)
36	77.0	108.0	59.0	30.0	15.0	36	—	—	814(30.1)	440(16.3)	225(8.3)
42	104.0	146.0	79.0	40.0	20.0	42	—	—	1100(40.7)	595(22.0)	303(11.2)

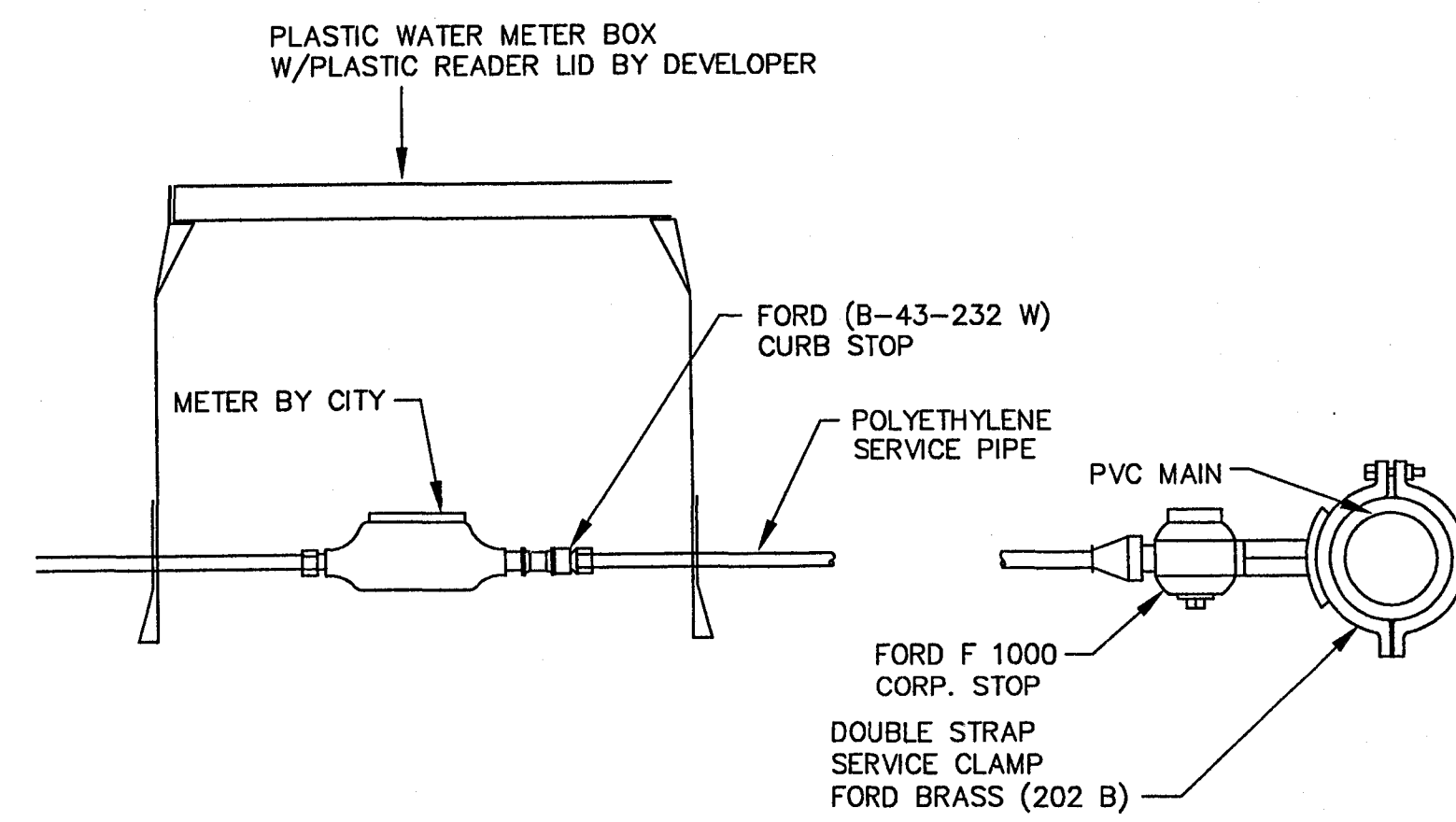
VOLUME OF BLOCKS INCLUDING SOIL LOAD CU. FT. (CU. YDS.)

- NOTE:**
ABOVE VALUES CALCULATED USING P=100 AND ALLOWANCE. SOIL BRG. = 1500 PSF. FOR DIFFERENT P, MULTIPLY ABOVE VALUES BY P/100.
FOR DIFFERENT SOIL BRG, MULTIPLY ABOVE VALUES BY 1500/S.B.

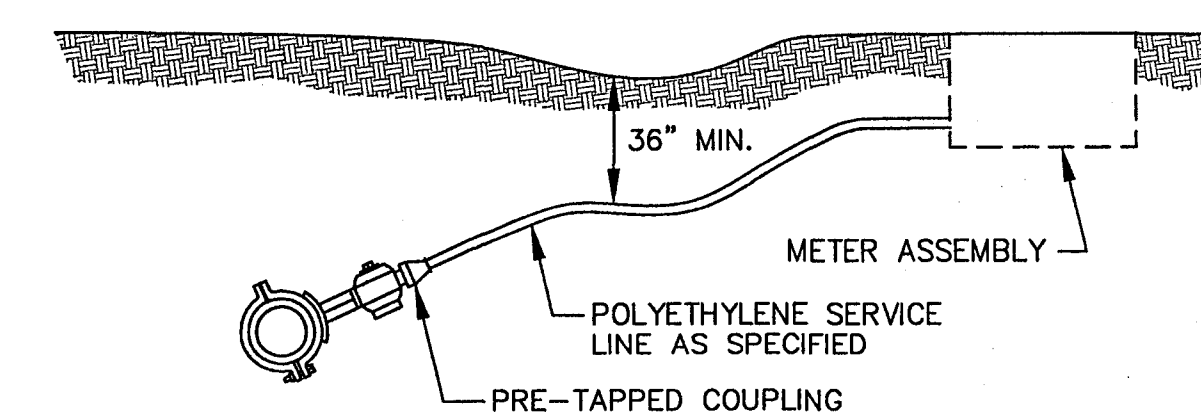
- NOTE:**
ABOVE VALUES REPRESENT THE VOLUME OF BLOCKS INCLUDING SOIL LOAD IN CU.FT. (CU.YDS.) THE VALUES WERE CALCULATED USING A P=100 PSI AND A S.F.=1.5. FOR DIFFERENT P, MULTIPLY VALUES BY P/100.



TYPICAL ROADWAY SECTION
NOT TO SCALE



TYPICAL SERVICE ASSEMBLY
NOT TO SCALE



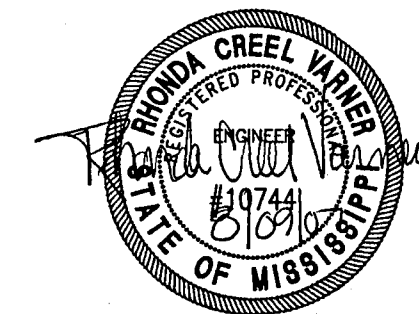
TYPICAL SERVICE ASSEMBLY FOR DUCTILE IRON PIPE
NOT TO SCALE

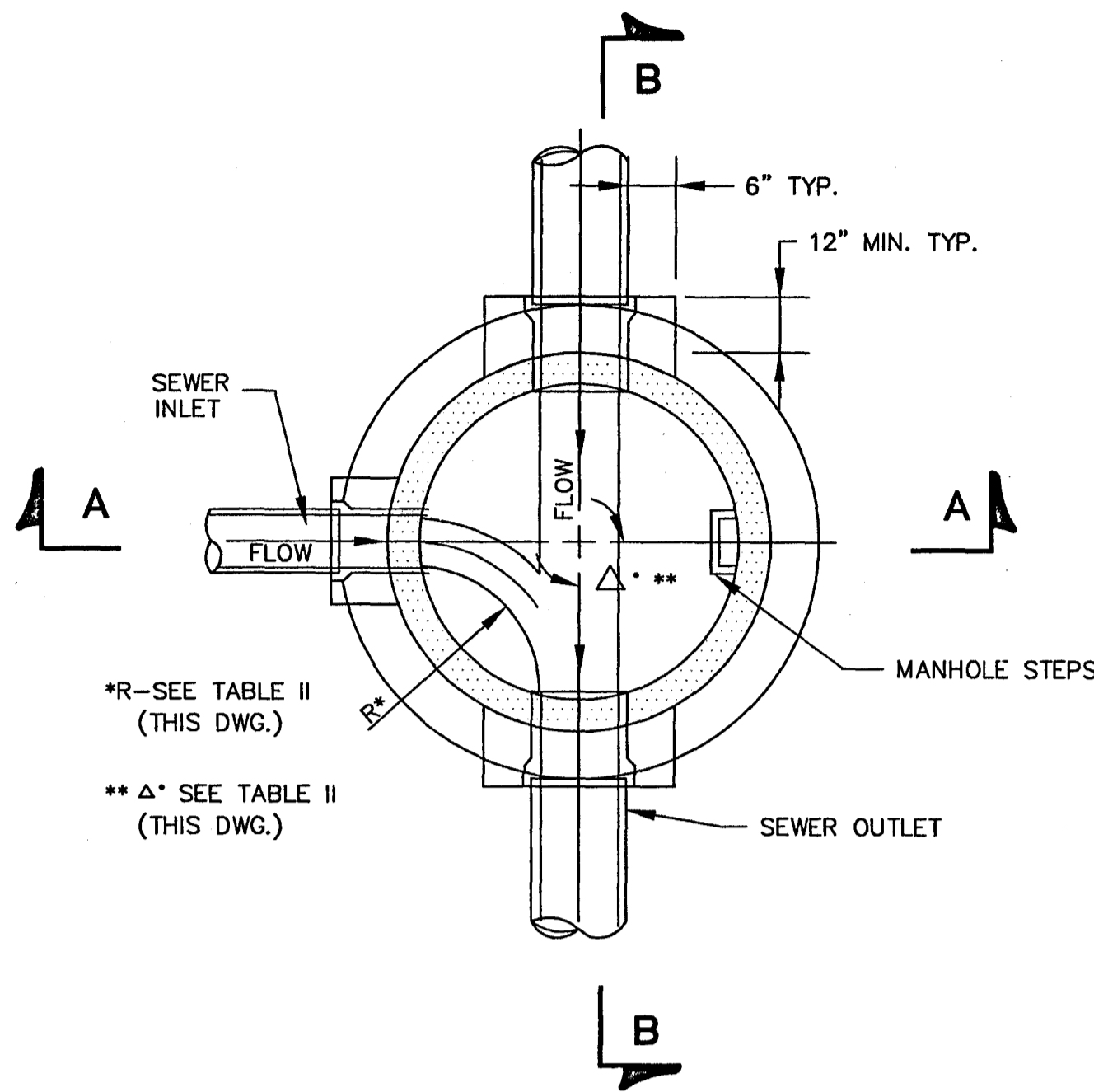
HARBOUR POINTE
A DEVELOPMENT OF
LAKE HARBOUR CROSSING INVESTMENTS, LLC

STANDARD WATER DETAILS

**CITY OF RIDGELAND
MADISON COUNTY, MISSISSIPPI**

DSGN: R.C.V.	DATE: 07/26/07	STERLING Consultants CONSULTING ENGINEERS	DRAWING NO. 15 OF 25
DRWN: R.A.P.	DATE: 07/26/07		
CHKD: R.C.V.	DATE: 07/26/07	SCALE: AS SHOWN	



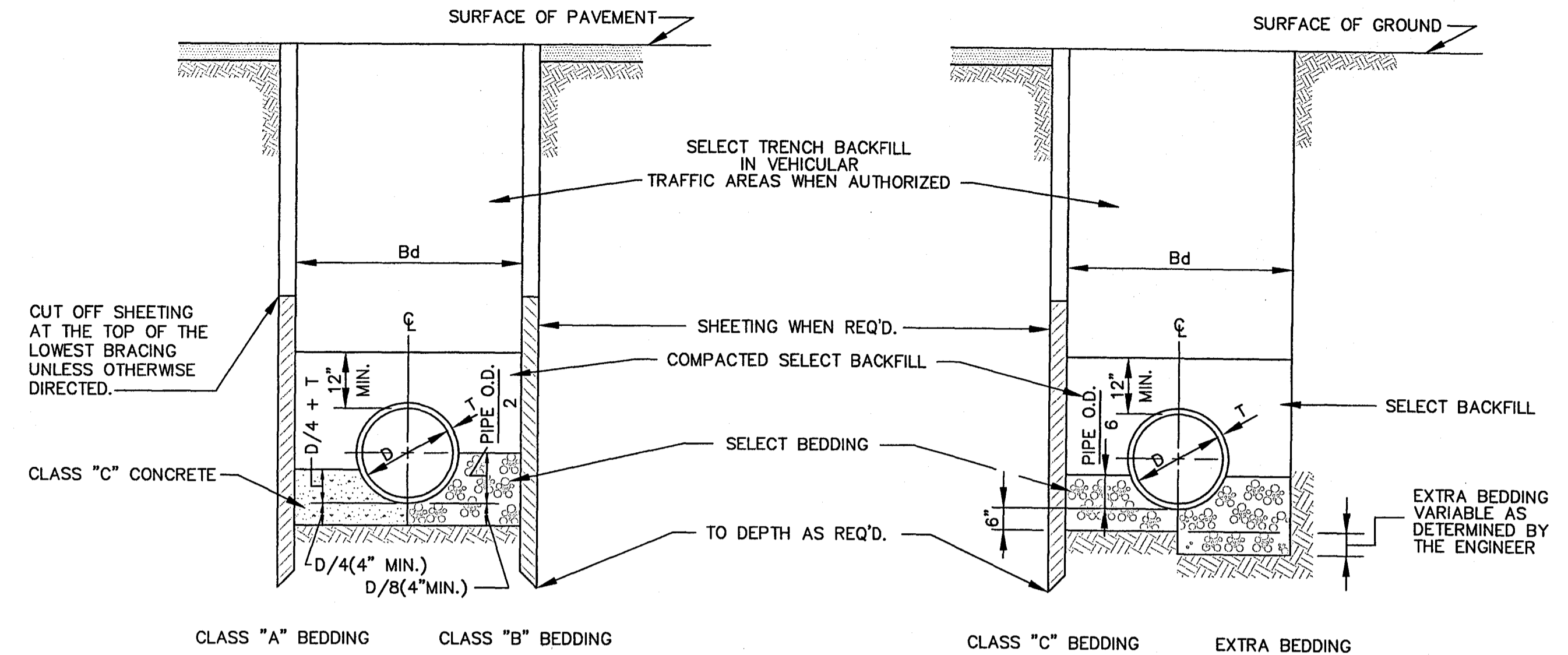


**SECTIONAL PLAN
STANDARD MANHOLE**
NOT TO SCALE

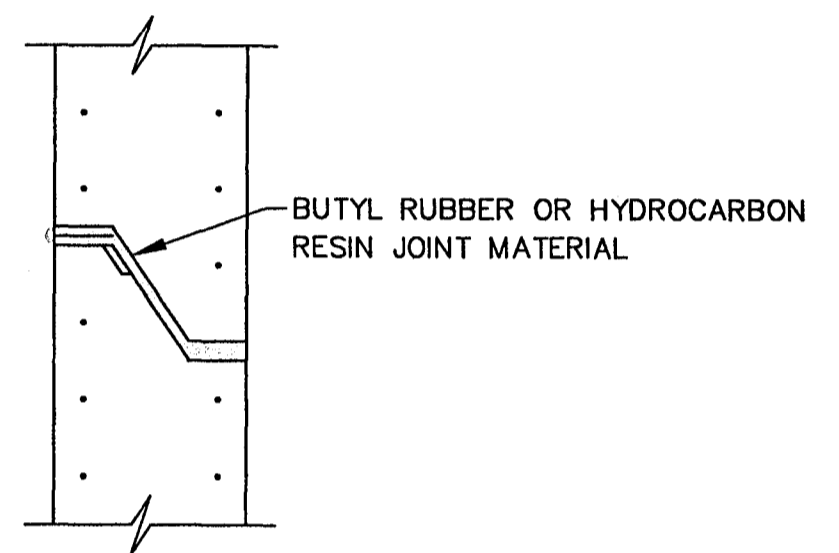
TABLE II
GOVERNING DIMENSIONS FOR MANHOLES

PIPE SIZE	Δ ANGLE	BASE DIAMETER **	"R"*
8" THRU 12"	0° TO 90°	4'	1'-6"
15"	0° TO 60°	4'	1'-10"
15"	60° TO 90°	4'	1'-10"
18"	0° TO 60°	4'	2'-3"
18"	60° TO 90°	4'	1'-10"
21"	0° TO 60°	4'	2'-7"
21"	60° TO 90°	5'	2'-4"
24"	0° TO 45°	4'	3'-0"
24"	45° TO 90°	5'	2'-3"
30"	0° TO 60°	5'	3'-9"
30"	60° TO 90°	6'	2'-8"
36"	0° TO 60°	6'	4'-6"
36"	60° TO 90°	7'	3'-11"
42"	0° TO 60°	7'	5'-3"
42"	60° TO 90°	8'	4'-7"
48"	0° TO 60°	8'	6'-0"
48"	60° TO 90°	9'	5'-3"

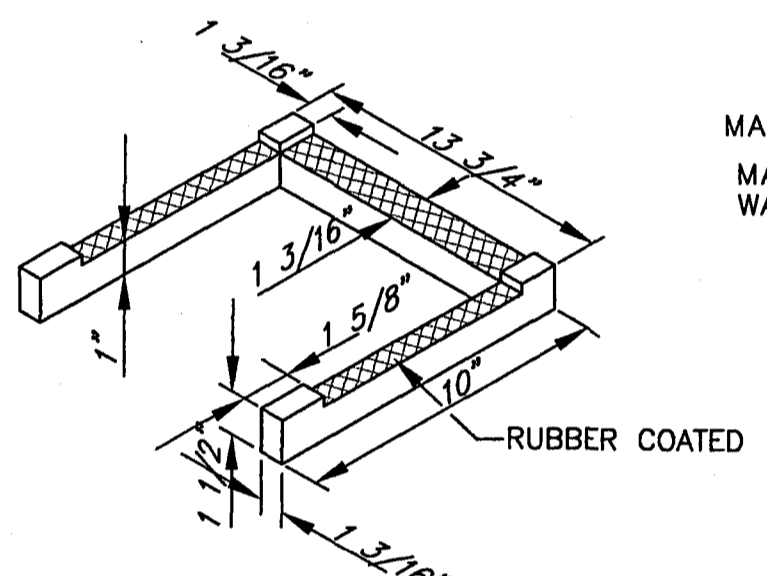
* SEE SECTIONAL PLAN, STANDARD MANHOLE
** PRECAST MANHOLE



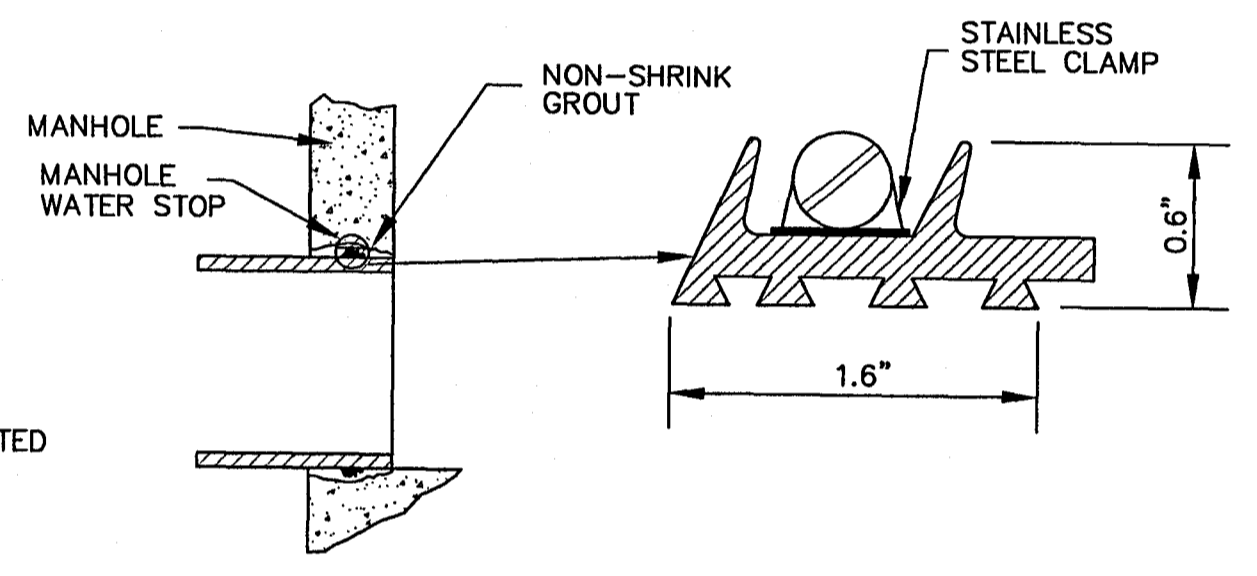
TYPICAL TRENCH DETAILS
NOT TO SCALE



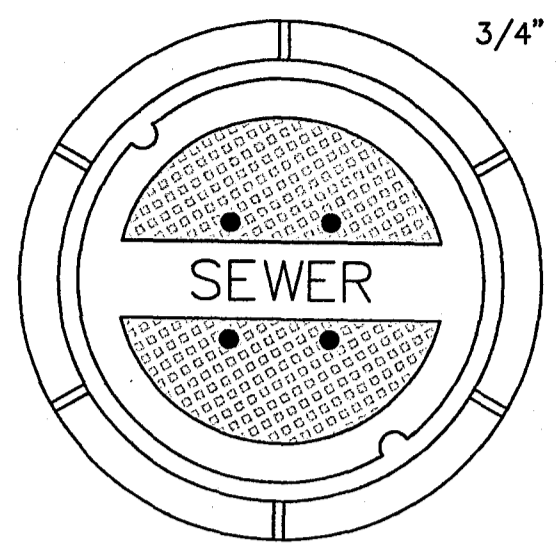
**TYPICAL PRECAST CONCRETE
MANHOLE JOINT DETAIL**
N.T.S.



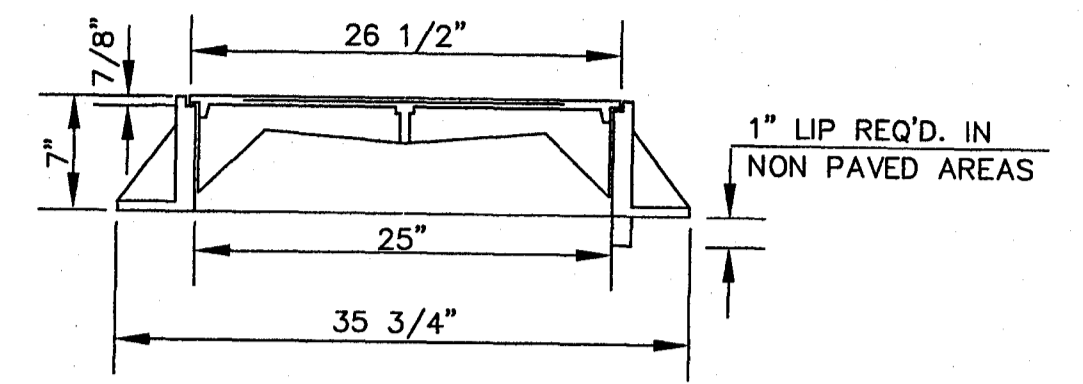
MANHOLE STEP DETAIL
NOT TO SCALE



**TYPICAL MANHOLE WATER STOP
FOR ABS, CLAY OR PVC PIPE**
EXISTING AND "STRADDLE" MANHOLES
N.T.S.



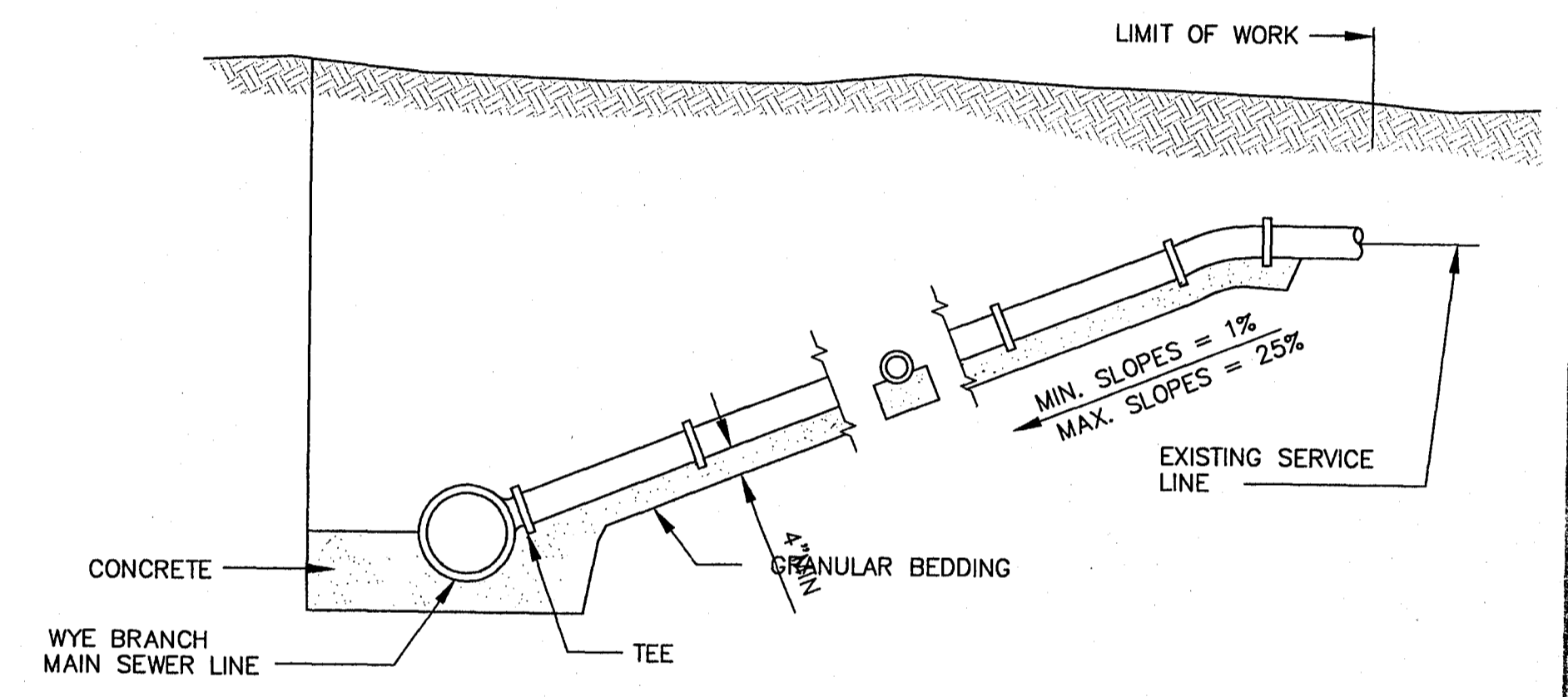
TOP PLAN OF COVER



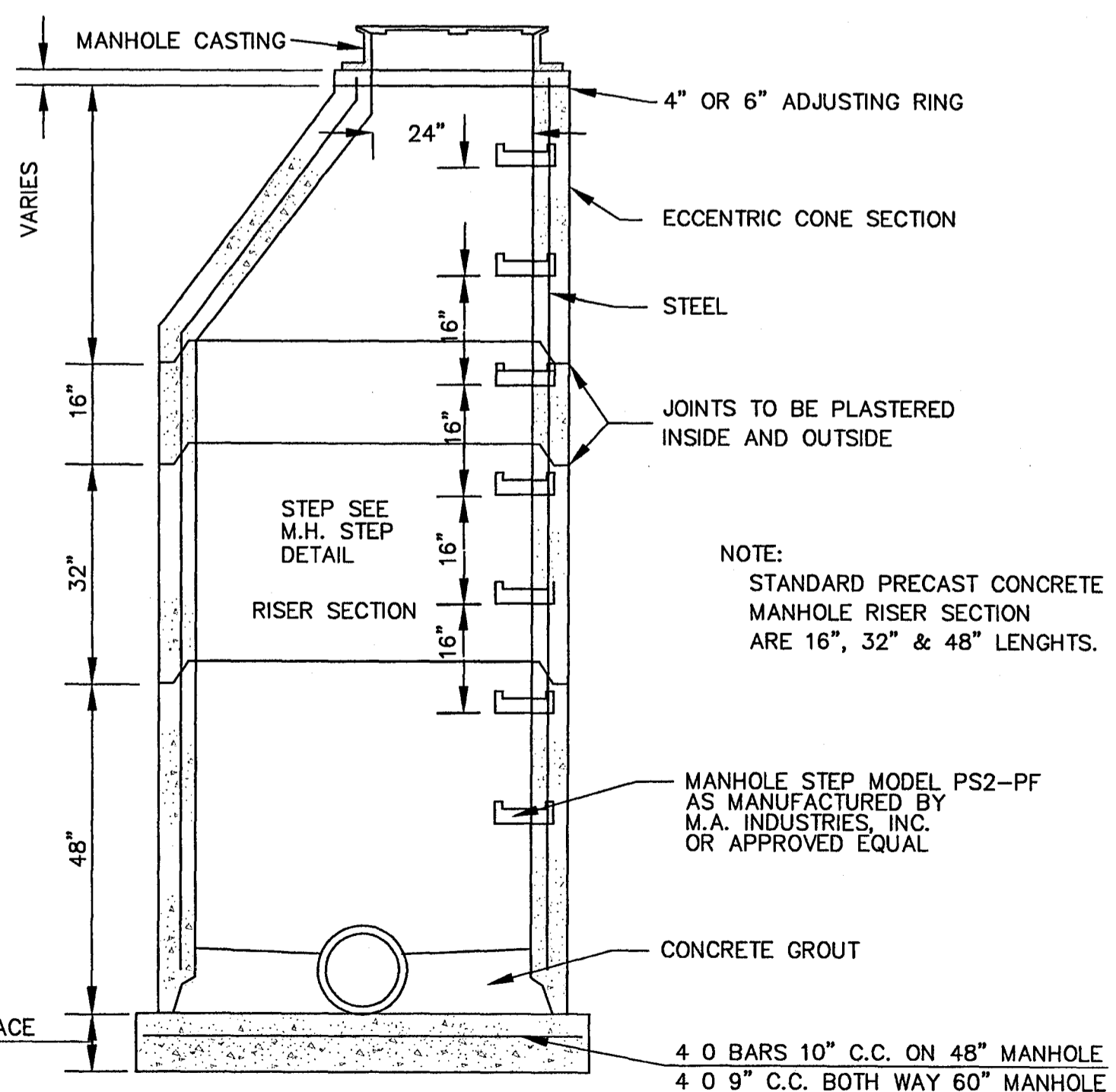
SECTION

FRAME & COVER WEIGHT 420 LBS.

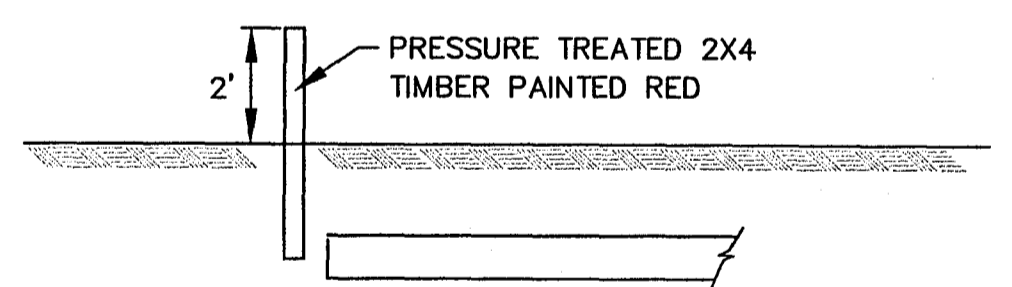
STANDARD MANHOLE FRAME AND COVER
N.T.S.



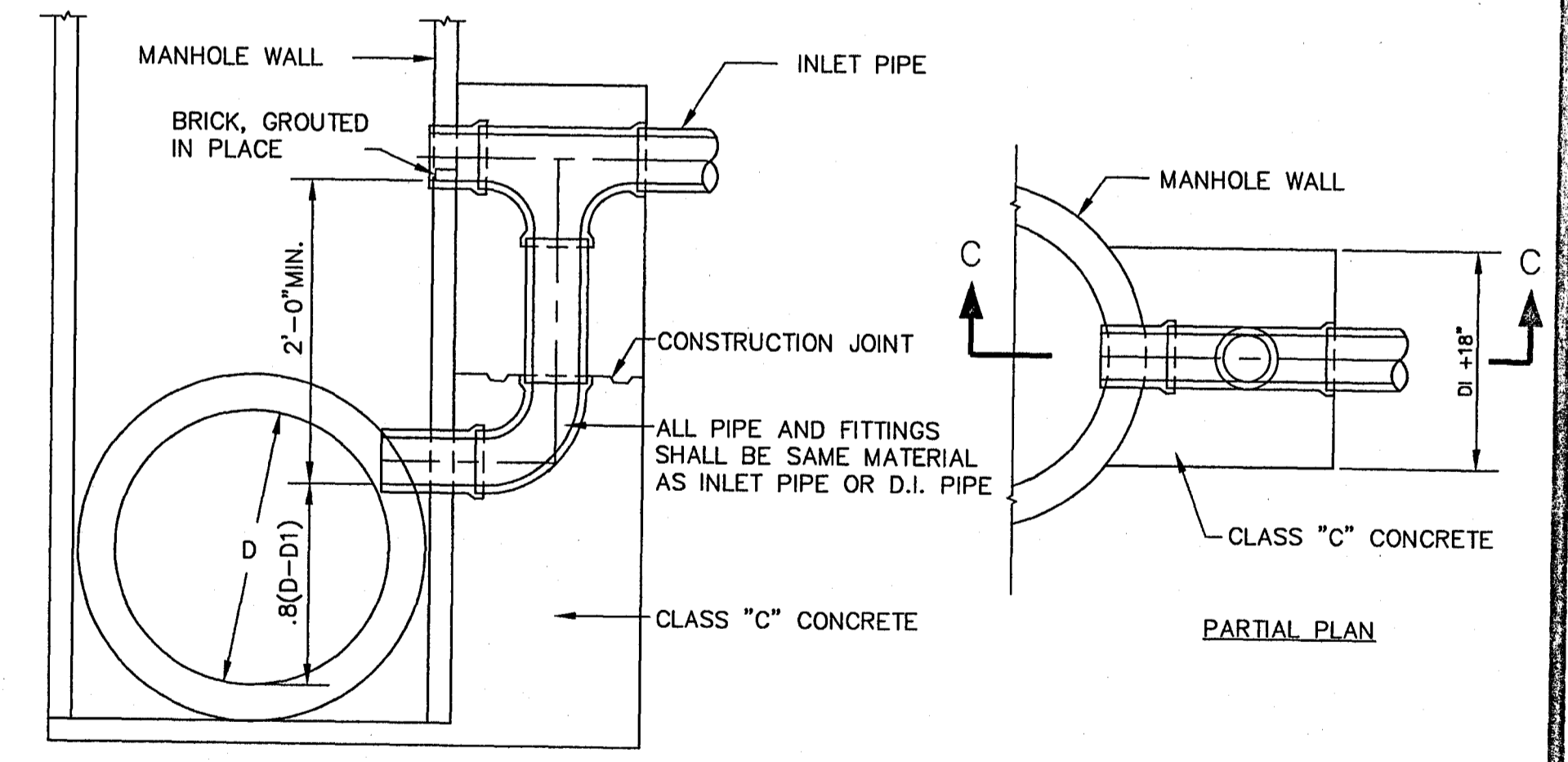
TYPICAL SERVICE LINE CONNECTION
NOT TO SCALE



SECTION OF PRECAST CONCRETE MANHOLE
N.T.S.



SERVICE LINE MARKER
NOT TO SCALE



TYPICAL VERTICAL DROP INLET AT MANHOLE
N.T.S.

REVISED PER CITY OF RIDGELAND COMMENTS ON 08/06/07

REVISION	BY	DATE
001	02/01/07	

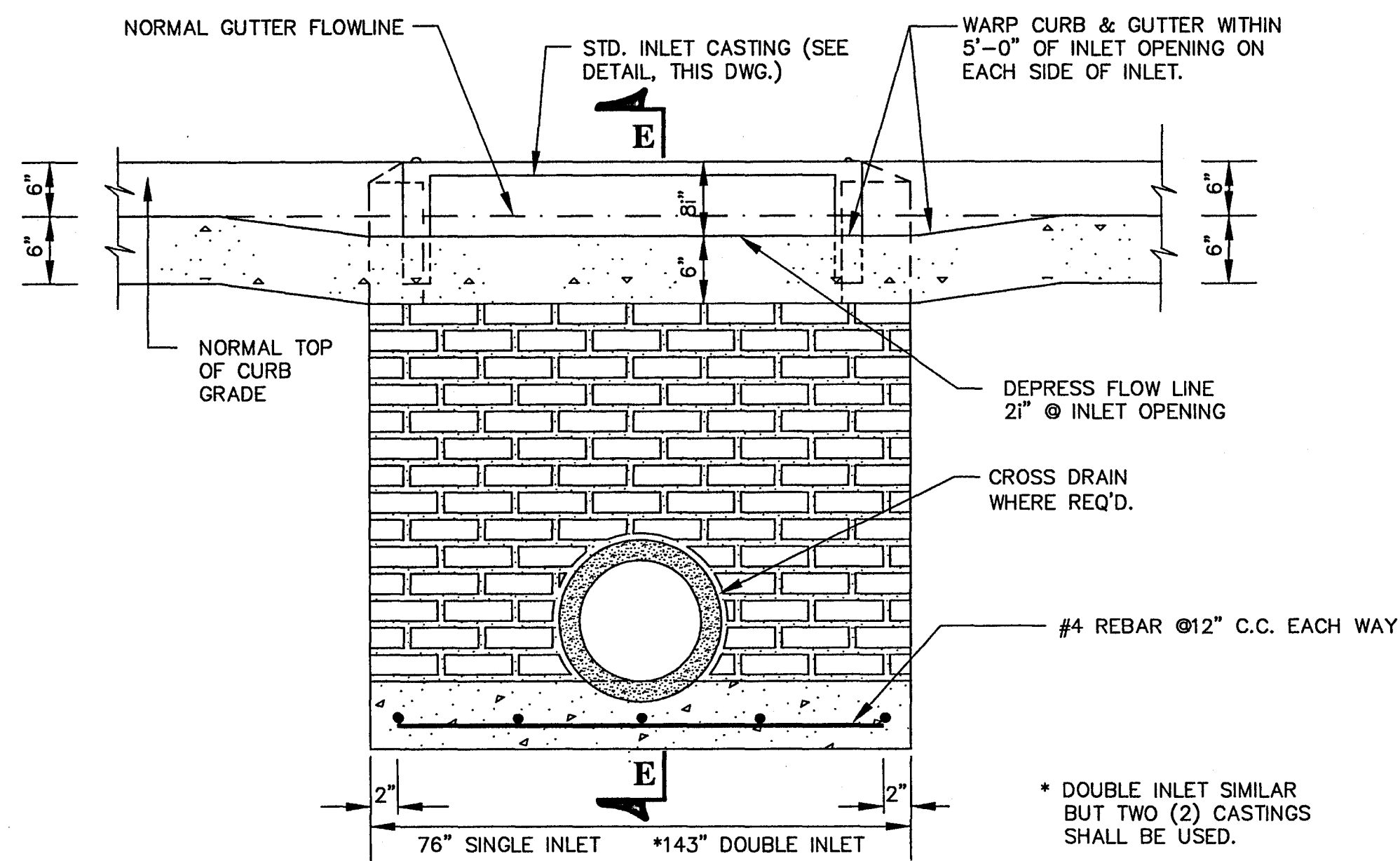


HARBOUR POINTE
A DEVELOPMENT OF
LAKE HARBOUR CROSSING INVESTMENTS, LLC

**STANDARD
SANITARY SEWER DETAILS**

CITY OF RIDGELAND
MADISON COUNTY, MISSISSIPPI

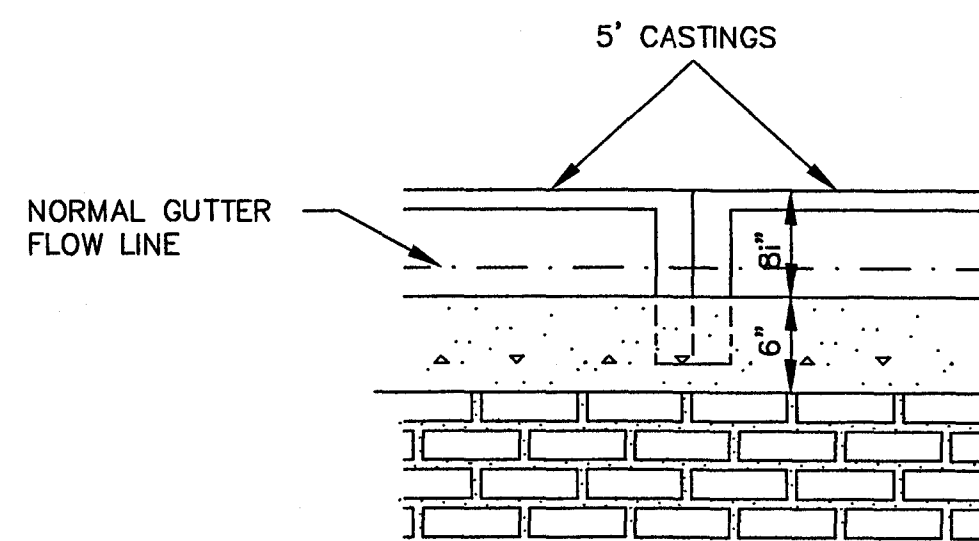
DSGN: R.V.	DATE: 01/14/07		DRAWING NO.
DRWN: R.A.P.	DATE: 01/14/07		16 OF 25
CHKD: R.V.	DATE: 01/14/07		
SCALE: AS SHOWN			



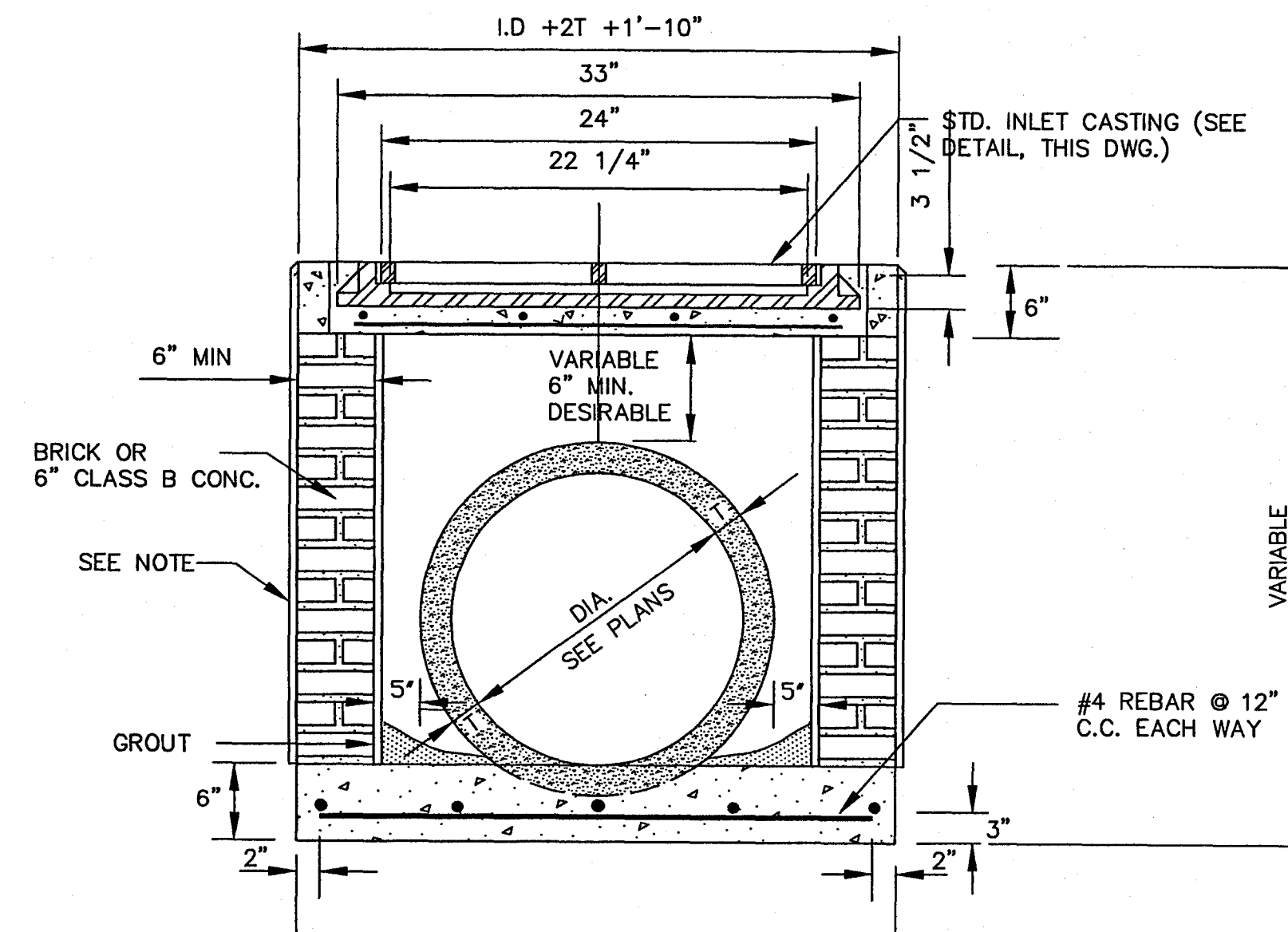
**FRONT ELEVATION
INLET TYPES "A" AND "A" MODIFIED**
NOT TO SCALE

GENERAL NOTES:

1. ALL BRICK WALLS SHALL BE PLASTERED INSIDE AND OUTSIDE WITH CEMENT MORTAR 1/2" THICK. CLASS "B" STRUCTURAL CONCRETE MAY BE USED TO CONSTRUCT INLETS IN LIEU OF BRICK MASONRY. IF CONCRETE IS USED, WALLS SHALL BE REINFORCED WITH #4 REBAR @ 16"C.C. EACH WAY.
2. CONCRETE SLAB AND COVER SHALL BE CLASS "B" STRUCTURAL CONCRETE.



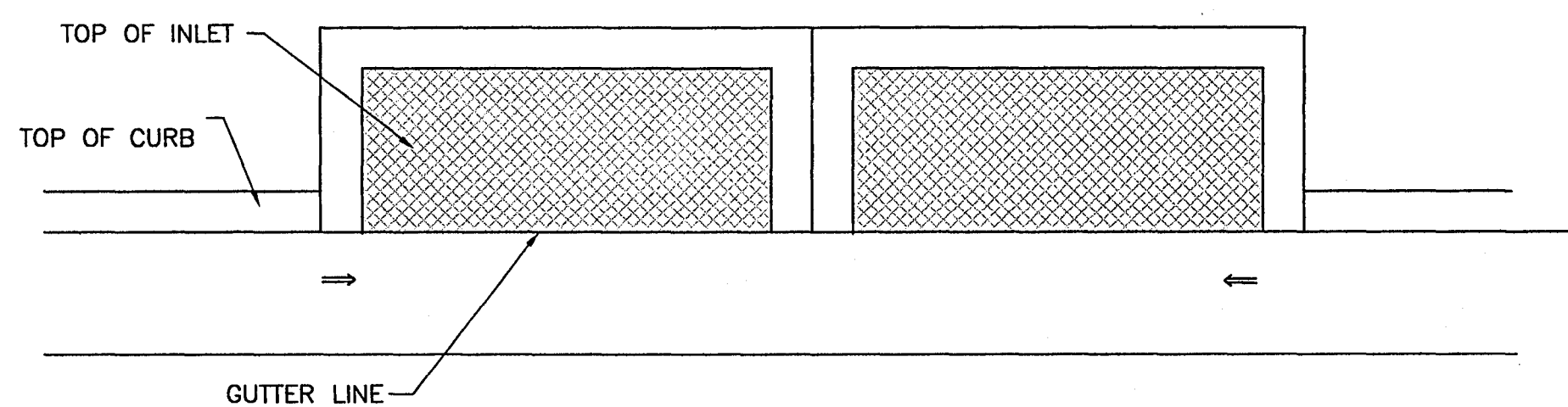
MIDSPAN ELEVATION - DOUBLE INLET
NOT TO SCALE



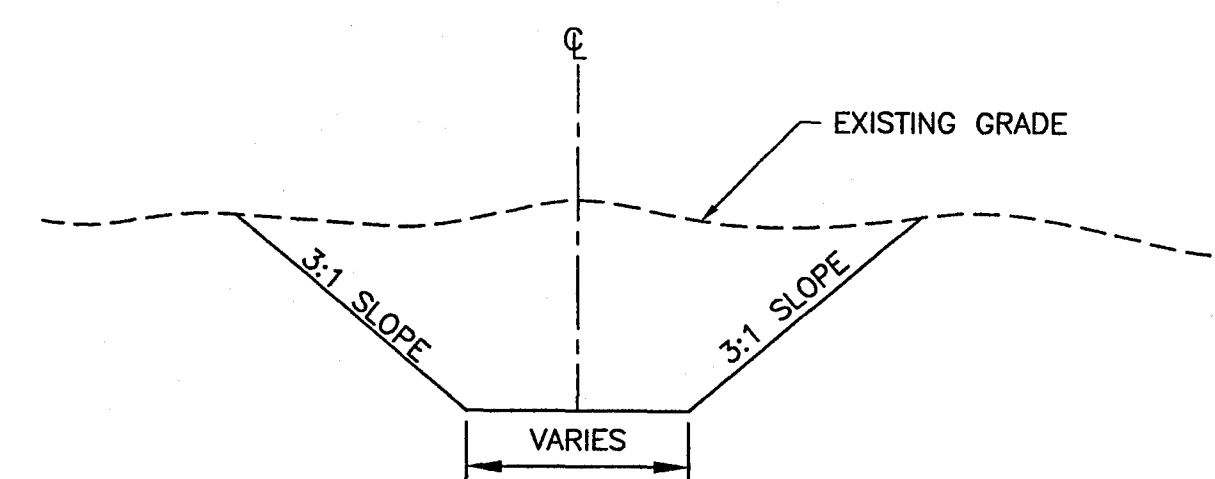
DROP INLET DETAIL
NOT TO SCALE

NOTE

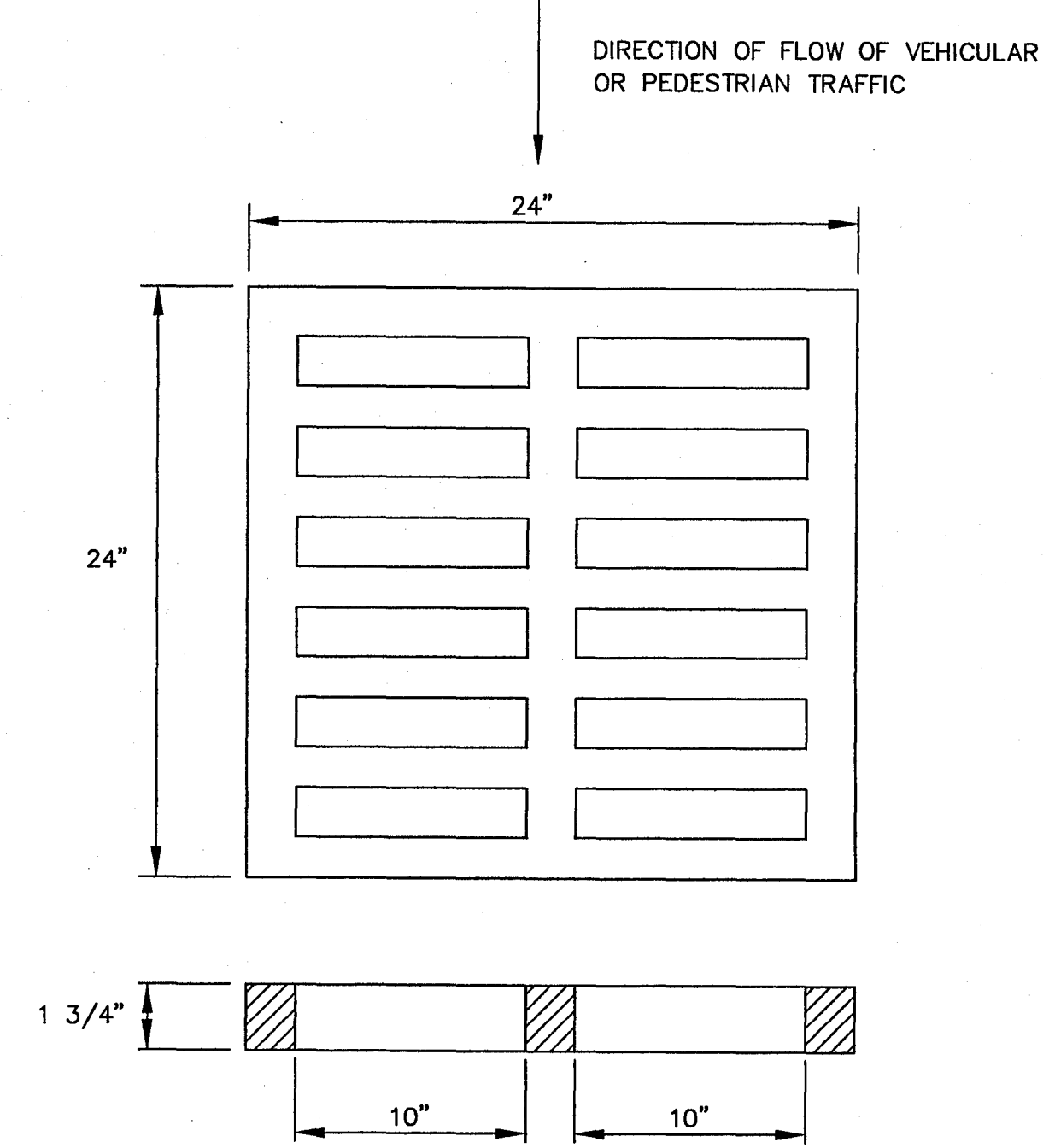
ALL BRICK WALLS SHALL BE PLASTERED INSIDE AND OUTSIDE WITH CEMENT MORTAR 1/2" THICK. CLASS "B" STRUCTURAL CONCRETE MAY BE USED TO CONSTRUCT INLETS IN LIEU OF BRICK MASONRY. IF CONCRETE IS USED, WALLS SHALL BE REINFORCED WITH #4 REBAR @ 16" O.C. EACH WAY.



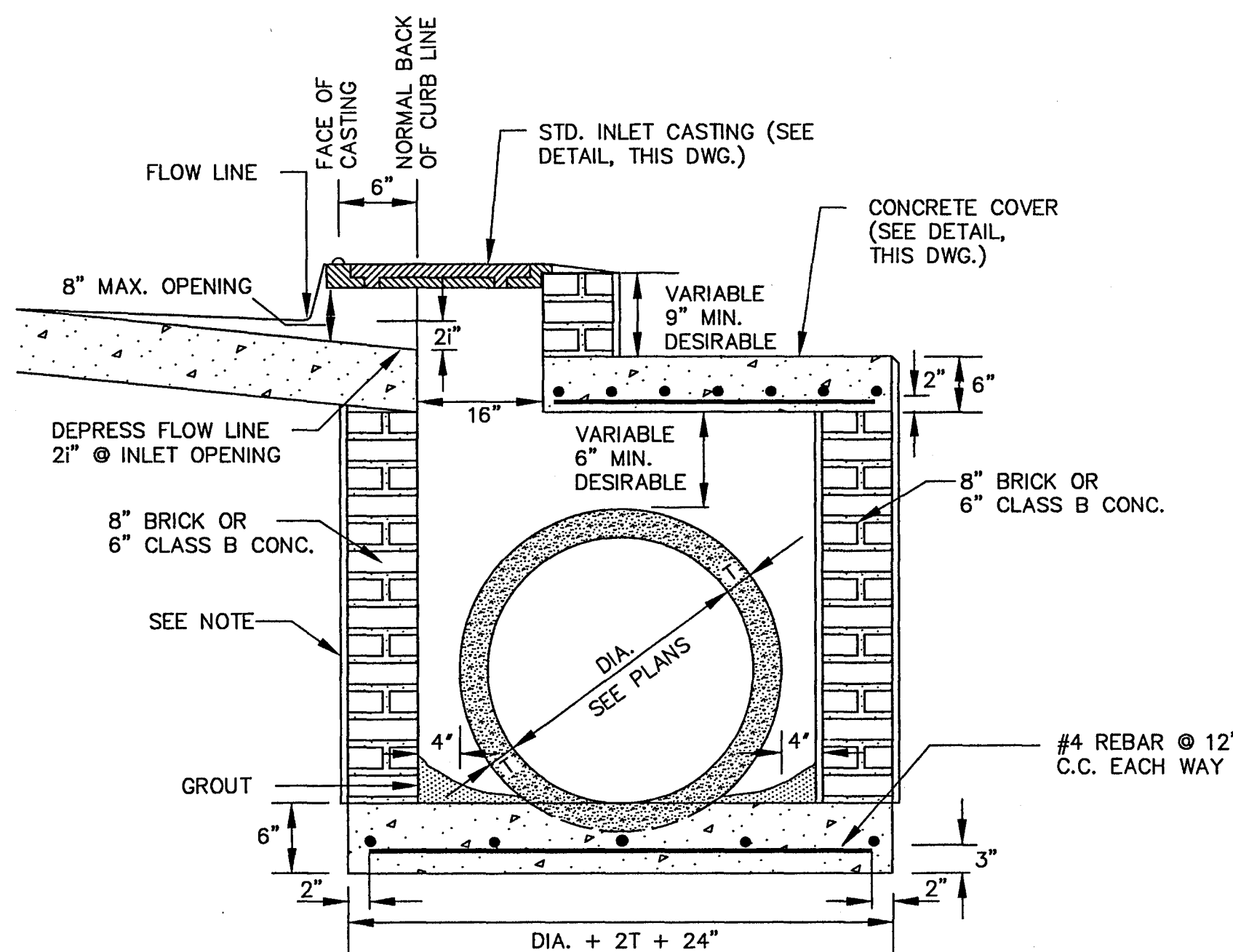
PLAN OF DOUBLE 4' STANDARD CURB INLET
NOT TO SCALE



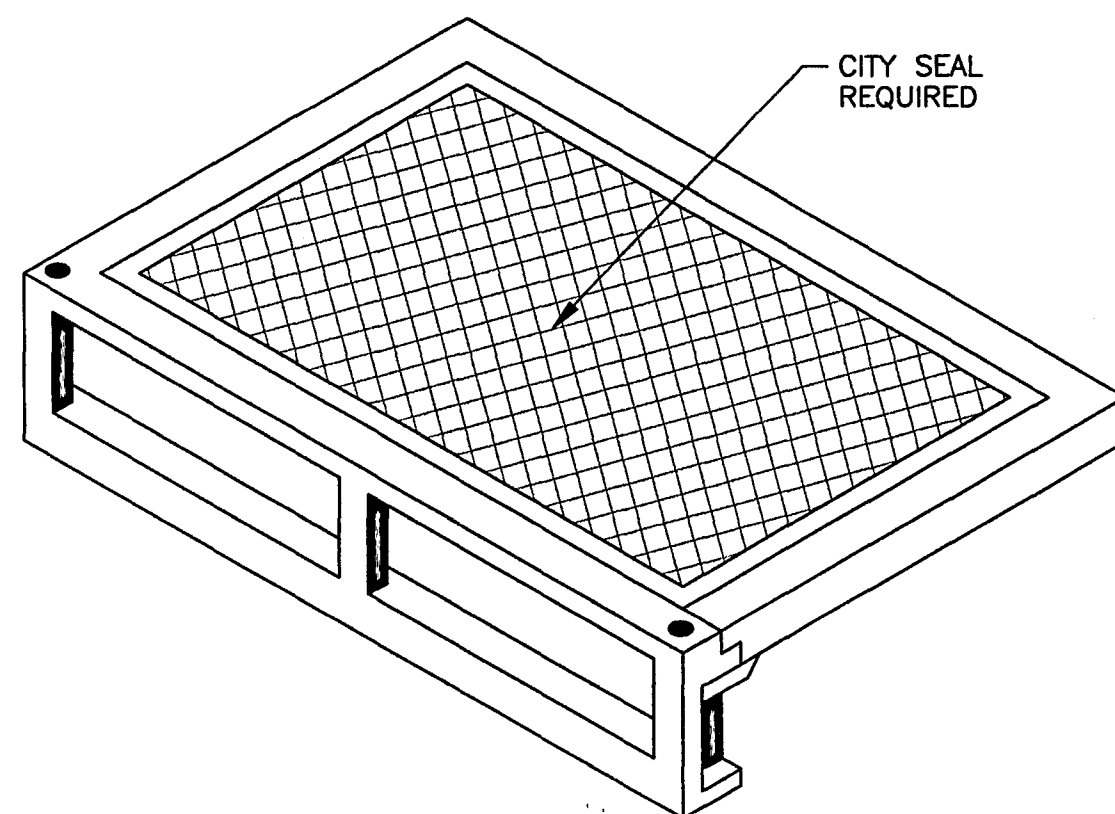
TYPICAL DETAIL OF DRAINAGE DITCH
NOT TO SCALE



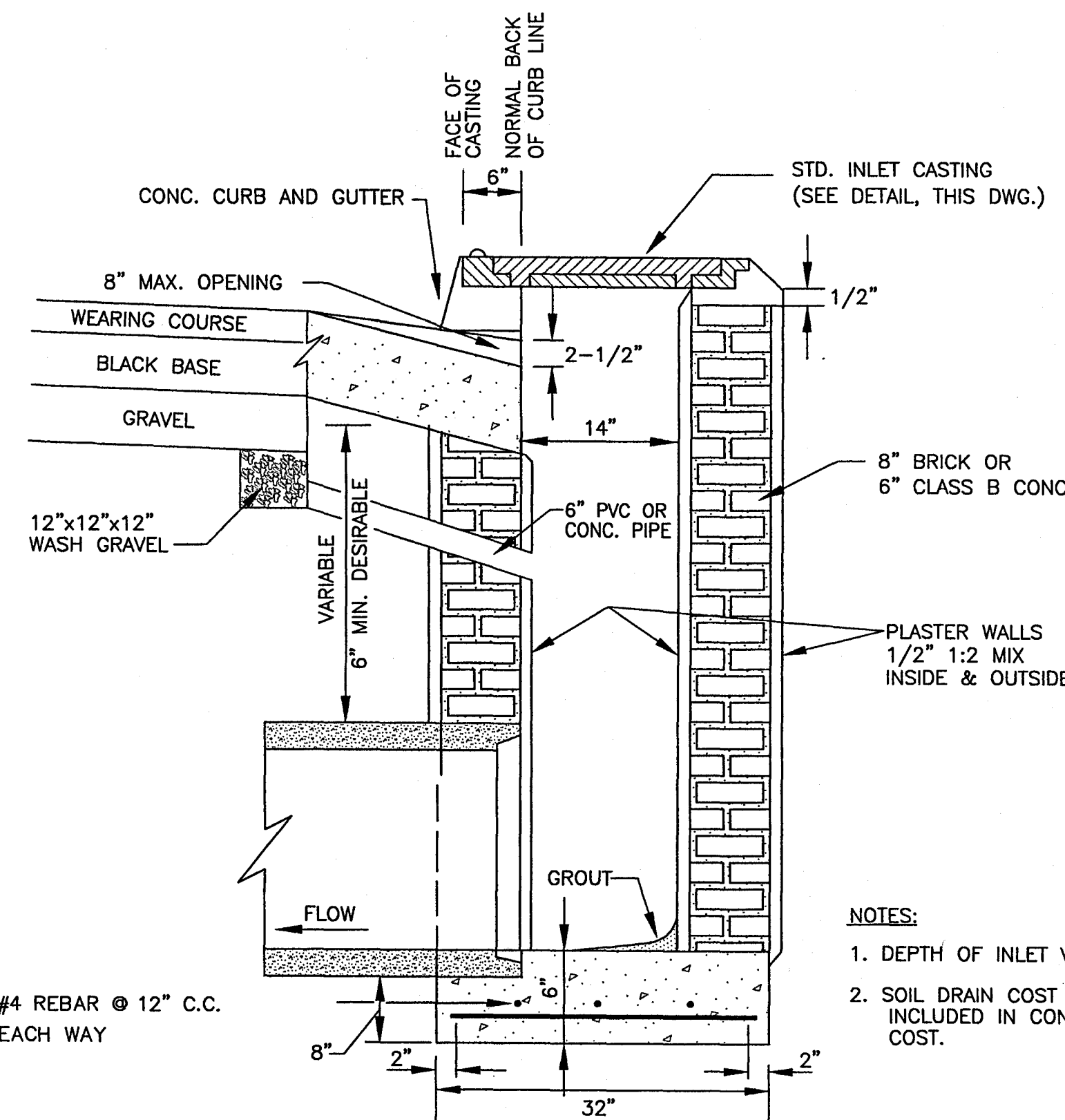
GRATE DETAIL
NOT TO SCALE



**SECTION E - E
TYPE "A" MODIFIED**
NOT TO SCALE



STANDARD CURB INLET CASTING
(VULCAN V-4302-1 OR HARPER RCB-7)
NOT TO SCALE



SECTION OF STANDARD CURB INLET
NOT TO SCALE

NOTES:

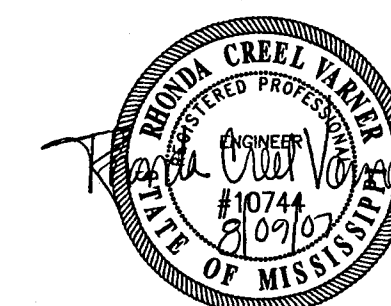
1. DEPTH OF INLET VARIABLE.
2. SOIL DRAIN COST TO BE INCLUDED IN CONSTRUCTION COST.

REVISION	BY	DATE
REVISED PER CITY OF RIDGELAND COMMENTS ON 08/06/07	EDP	08/20/07

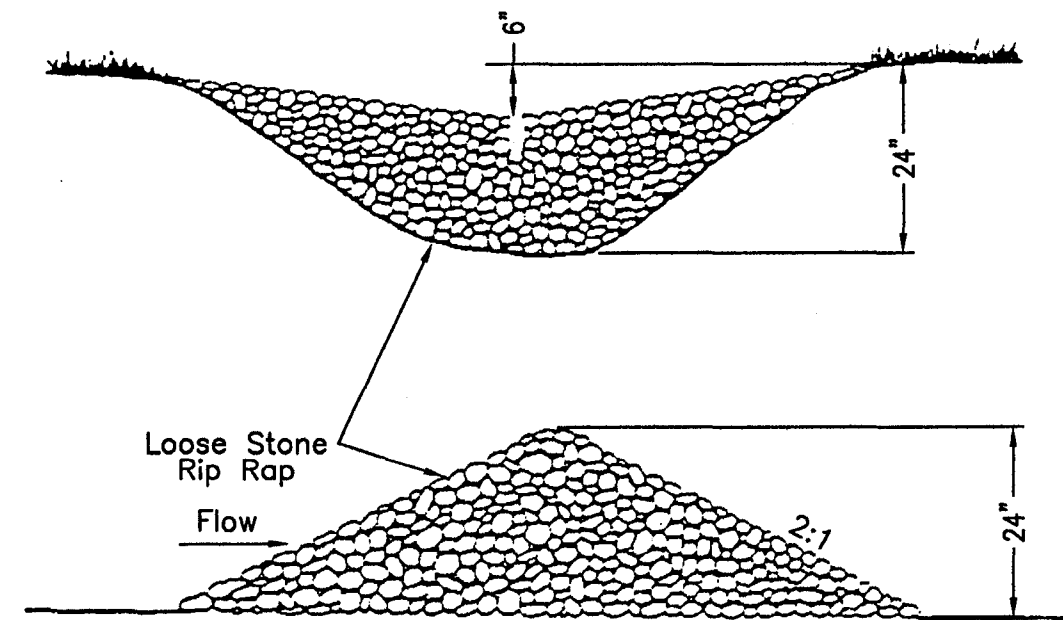
HARBOUR POINTE
A DEVELOPMENT OF
LAKE HARBOUR CROSSING INVESTMENTS, LLC

**STANDARD
STORM SEWER DETAILS**

CITY OF RIDGELAND
MADISON COUNTY, MISSISSIPPI



STERLING
CONSULTANTS
CONSULTING ENGINEERS



RIP RAP CHECK DAM
NOT TO SCALE
TYPICAL

Note: Check dam shall have debris removed once one-half (1/2) the barrier is covered.

Design Criteria

1. Drainage Area

The maximum allowable drainage area per drain is 5 acres.

2. Flexible Conduit

A. The slope drain shall consist of heavy duty flexible material designed for this purpose. The diameter of the slope drain shall be equal over its entire length. Reinforced hold-down grommets shall be spaced at 10-foot intervals.

B. Slope drains shall be sized according to the following table:

SIZE OF SLOPE DRAIN

Maximum Drainage Area (Acres)	Pipe Diameter, D (in.)
0.5	12
0.75	15
1.5	16
2.5	21
3.5	24
5.0	30

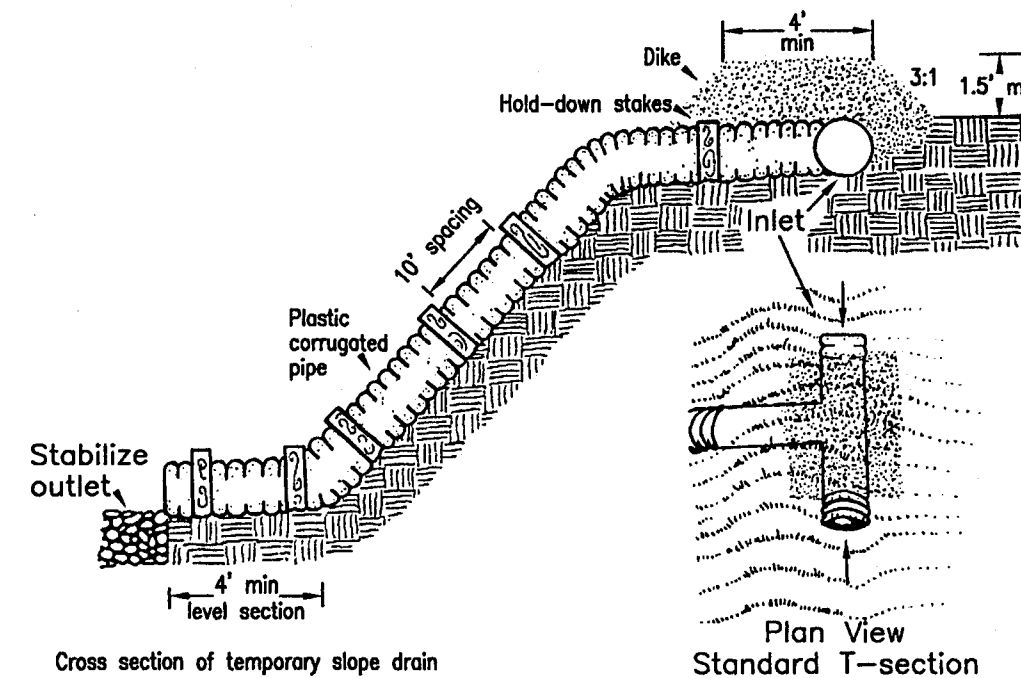
3. Entrance Sections

The entrance to the slope drain shall consist of a flared end section or a standard T-section fitting. Watertight fittings shall be provided.

4. Dike Design

An earthen dike shall be used to direct stormwater runoff into the temporary slope drain.

The height of the dike at the centerline of the inlet shall be equal to the diameter of the pipe (D) plus 6 inches. Where the dike height is greater than 18 inches at the inlet, it shall be sloped at the rate of 3:1 or flatter, to connect with the remainder of the dike. The remainder of the dike shall be a height of 18" above natural ground.



5. Outlet Protection

The outlet of the slope drain shall be protected from erosion by placement of rip rap.

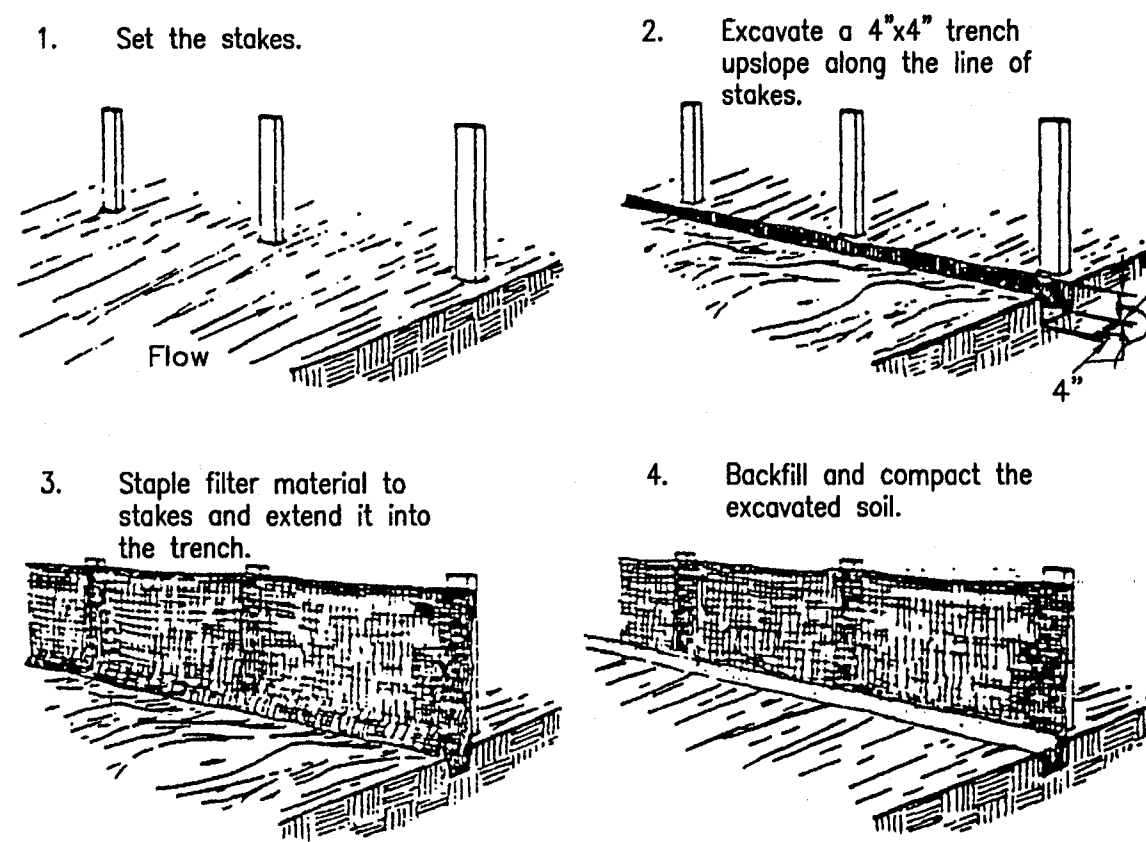
Construction Specifications

- The measure shall be placed on undisturbed soil or well-compacted fill.
- The entrance section shall slope toward the slope drain at the minimum rate of 1/2-inch per foot.
- The soil around and under the entrance section shall be hand tamped in 4-inch lifts to the top of the dike to prevent piping failure around the inlet.
- The slope drain shall be securely staked to the slope at the grommets provided.
- The slope drain sections shall be securely fastened together and have watertight fittings.

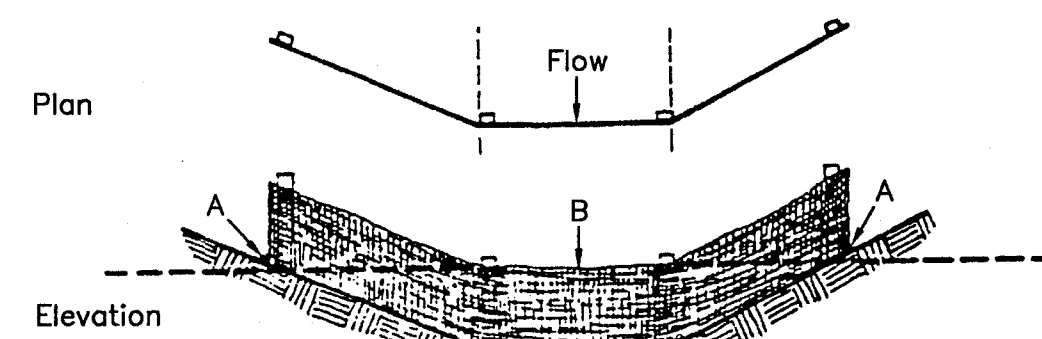
Maintenance

The slope drain structure shall be inspected weekly and after every storm and repairs made if necessary. The contractor should avoid the placement of any material on and prevent construction traffic across the slope drain.

SLOPE DRAIN DETAIL
NOT TO SCALE
TYPICAL

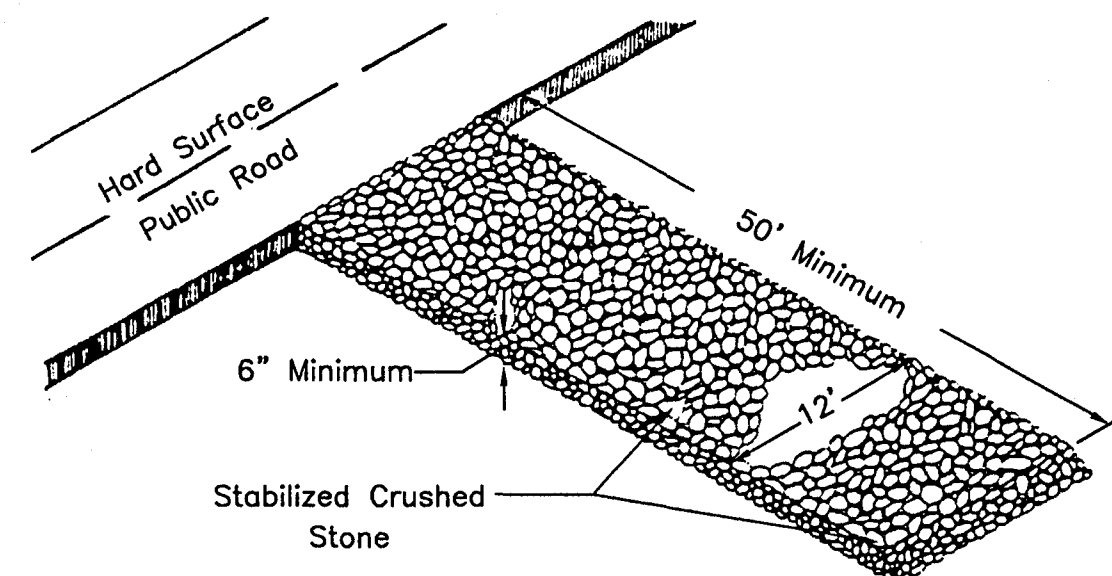


CONSTRUCTION OF A FILTER BARRIER

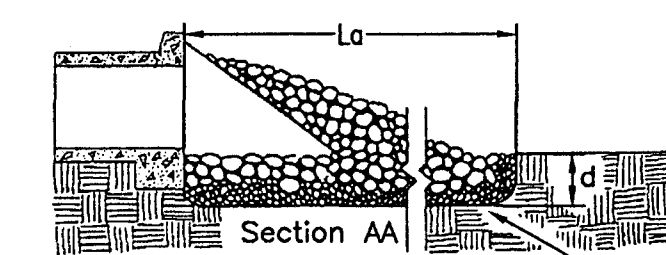
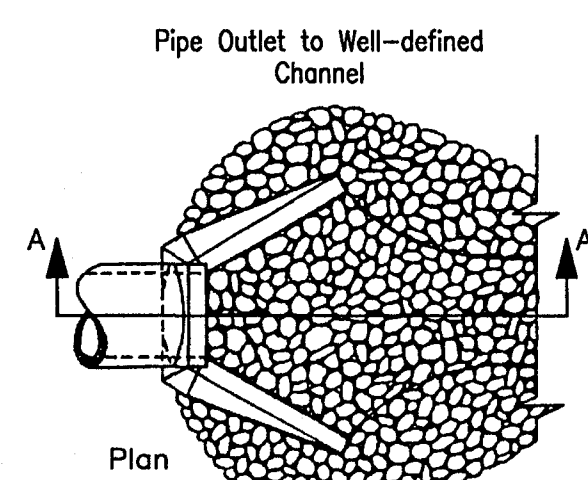


Points A should be higher than point B
FILTER BARRIER IN DRAINAGE WAY
NOT TO SCALE
TYPICAL

Note: Filter barrier shall have debris removed once one-half (1/2) the barrier is covered.



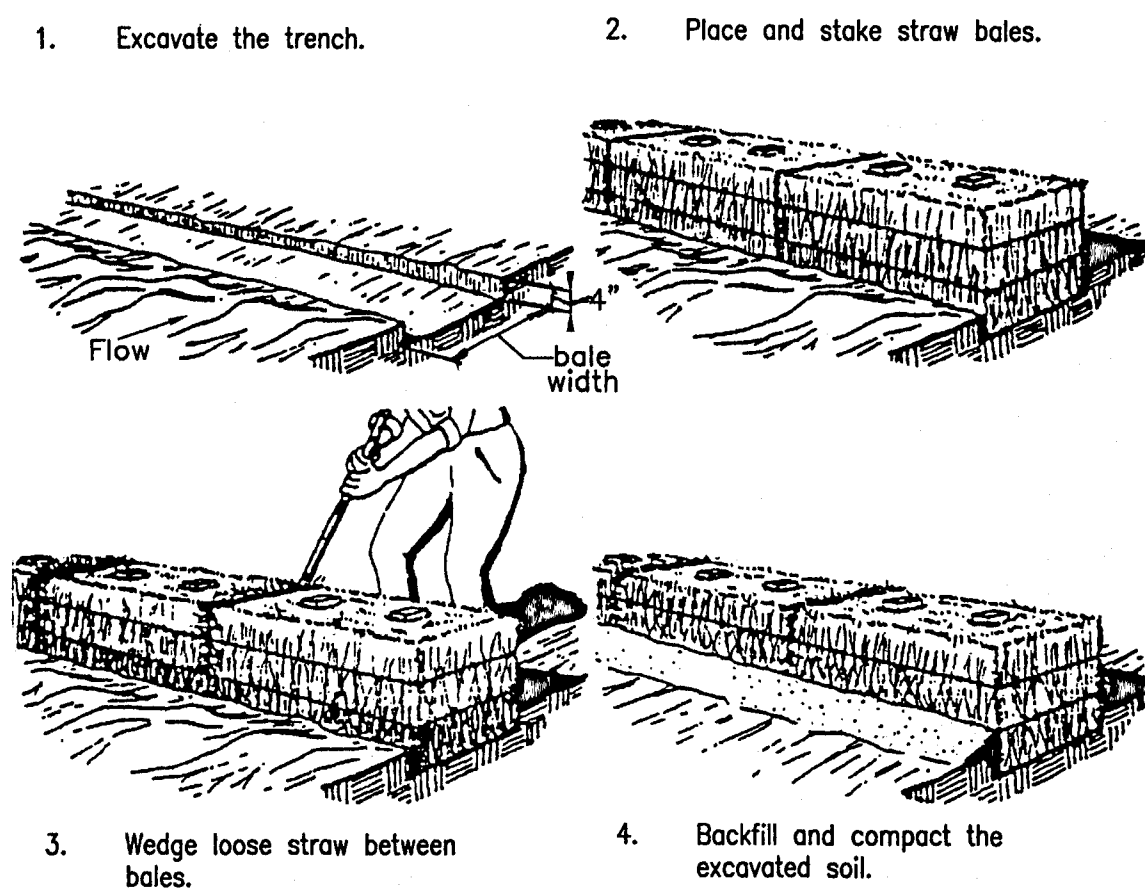
CONSTRUCTION ENTRANCE / EXIT DRIVE
NOT TO SCALE
TYPICAL



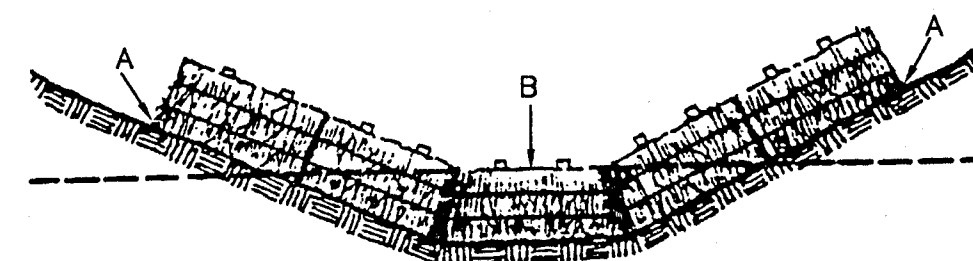
RIP RAP OUTLET PROTECTION
NOT TO SCALE
TYPICAL

Notes

- L_a is the length of the riprap apron.
- $d=1.5$ times the maximum stone diameter but not less than 6".
- In a well-defined channel, extend the apron up the channel banks to an elevation of 6" above the maximum tailwater depth or to the top of the bank, whichever is less.
- A filter blanket or filter fabric should be installed between the riprap and soil foundation.

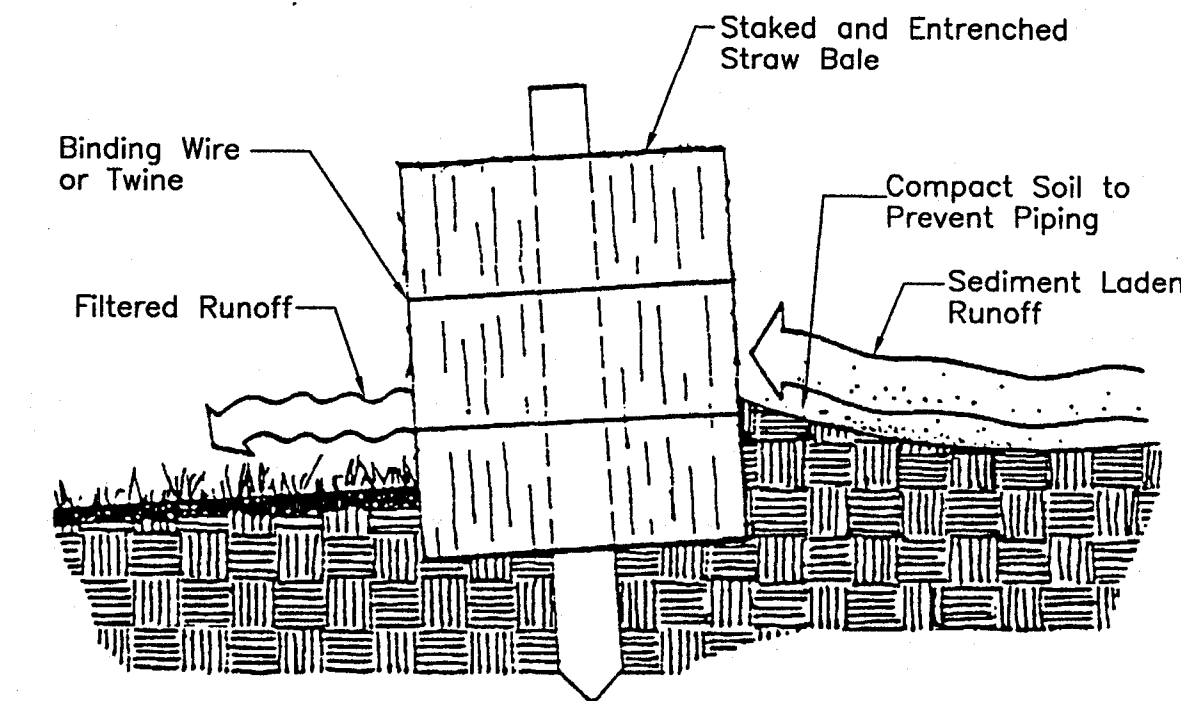


CONSTRUCTION OF A STRAW BALE BARRIER



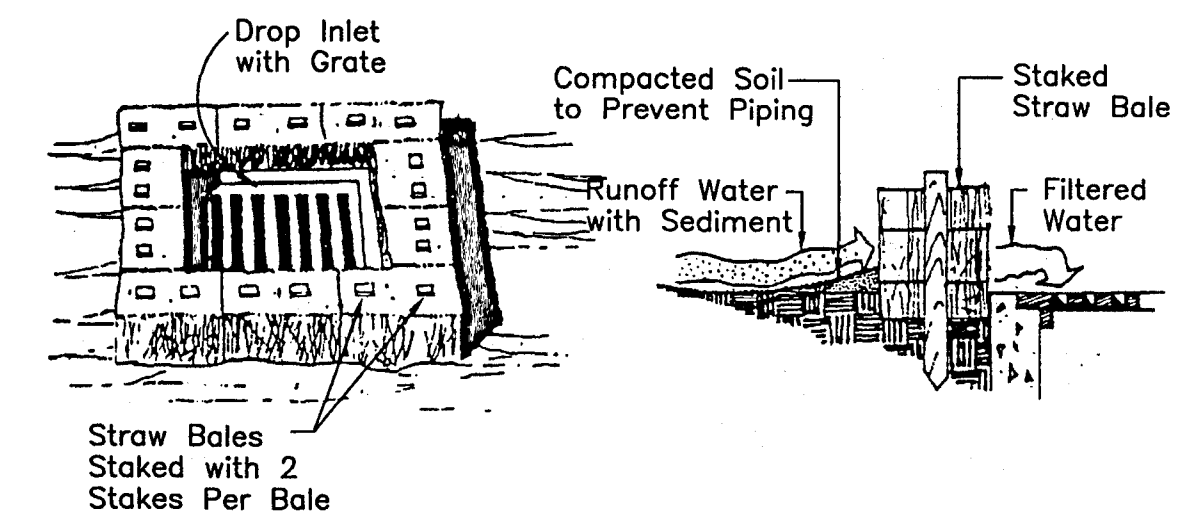
Points A should be higher than point B
HAYBALE BARRIER IN DRAINAGE WAY
NOT TO SCALE
TYPICAL

Note: Haybale barrier shall have debris removed once one-half (1/2) the barrier is covered.



STAKED HAYBALE
NOT TO SCALE
TYPICAL

Note: Haybale barrier shall have debris removed once one-half (1/2) the barrier is covered.



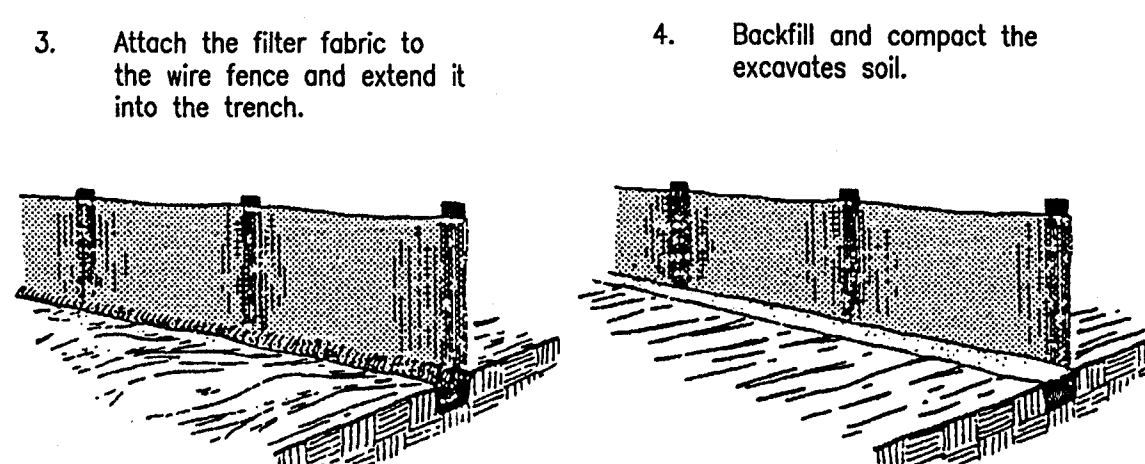
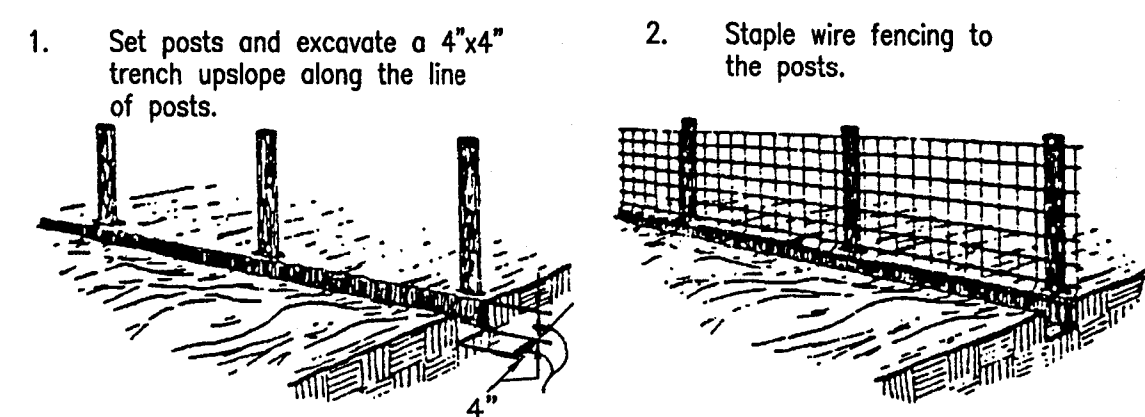
SPECIFIC APPLICATION

This method of inlet protection is applicable where the inlet drains a relatively flat area (slopes no greater than 5 percent) where sheet or overland flows (not exceeding 0.5 cfs) are typical. The method shall not apply to inlets receiving concentrated flows, such as in street or highway medians.

INLET

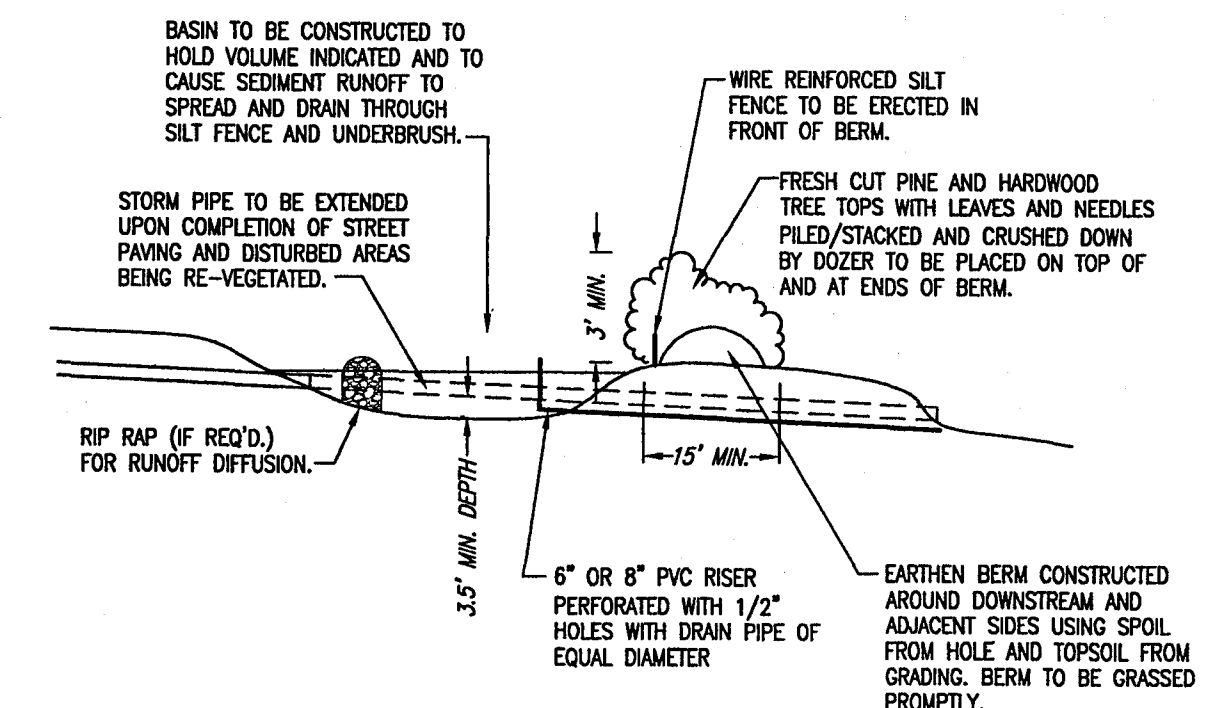
NOT TO SCALE
TYPICAL

Note: Inlet sediment barrier shall have debris removed once one-half (1/2) the barrier is covered.



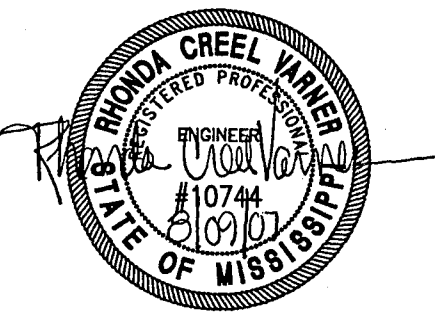
SILT FENCE
NOT TO SCALE
TYPICAL

Note: Silt fence shall have debris removed once one-half (1/2) the barrier is covered.



SEDIMENT BASIN DETAIL
NOT TO SCALE
TYPICAL

NOTE: SEDIMENT BASINS SHALL HAVE DEBRIS REMOVED ONCE THE BASIN IS FIFTY PERCENT (50%) FULL.



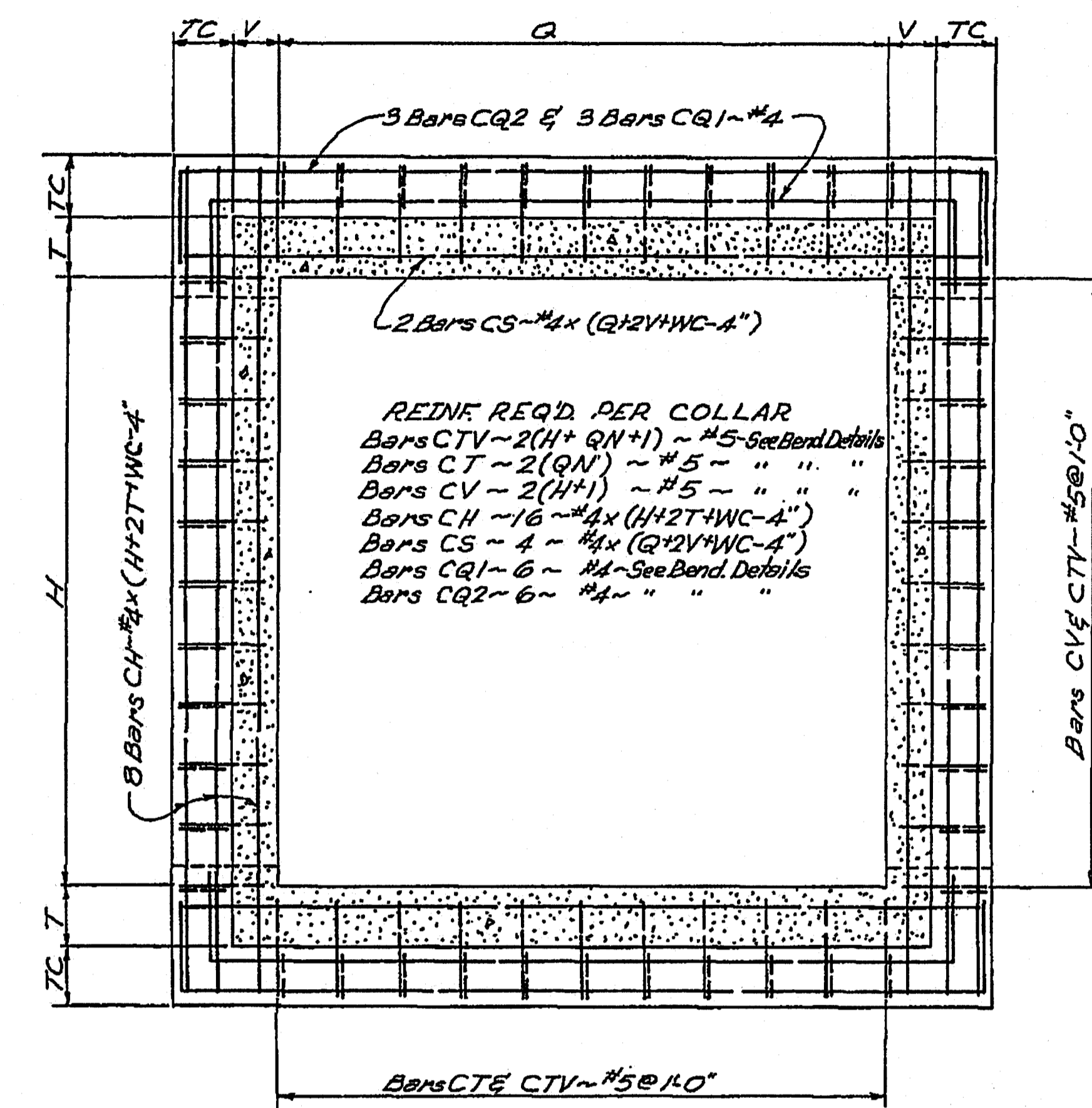
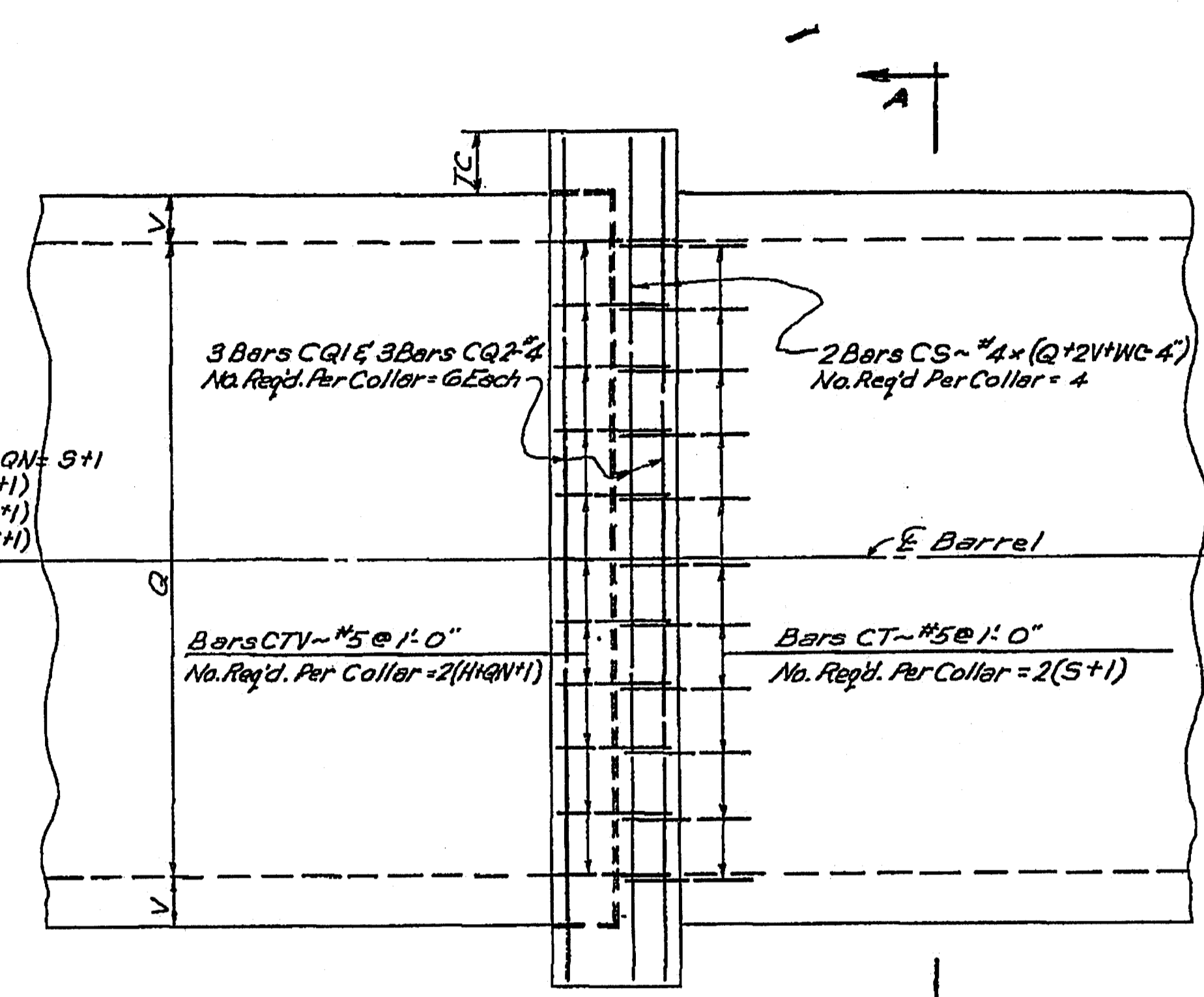
HARBOUR POINTE
A DEVELOPMENT OF
LAKE HARBOUR CROSSING INVESTMENTS, LLC

STORM WATER POLLUTION PREVENTION MEASURE DETAILS

CITY OF RIDGELAND
MADISON COUNTY, MISSISSIPPI

DSGN: R.V.	DATE: 07/10/07	STERLING CONSULTANTS, INC.	DRAWING NO.
CHKD: R.V.	DATE: 07/10/07		18 OF 25
REVISION		SCALE: NOT TO SCALE	

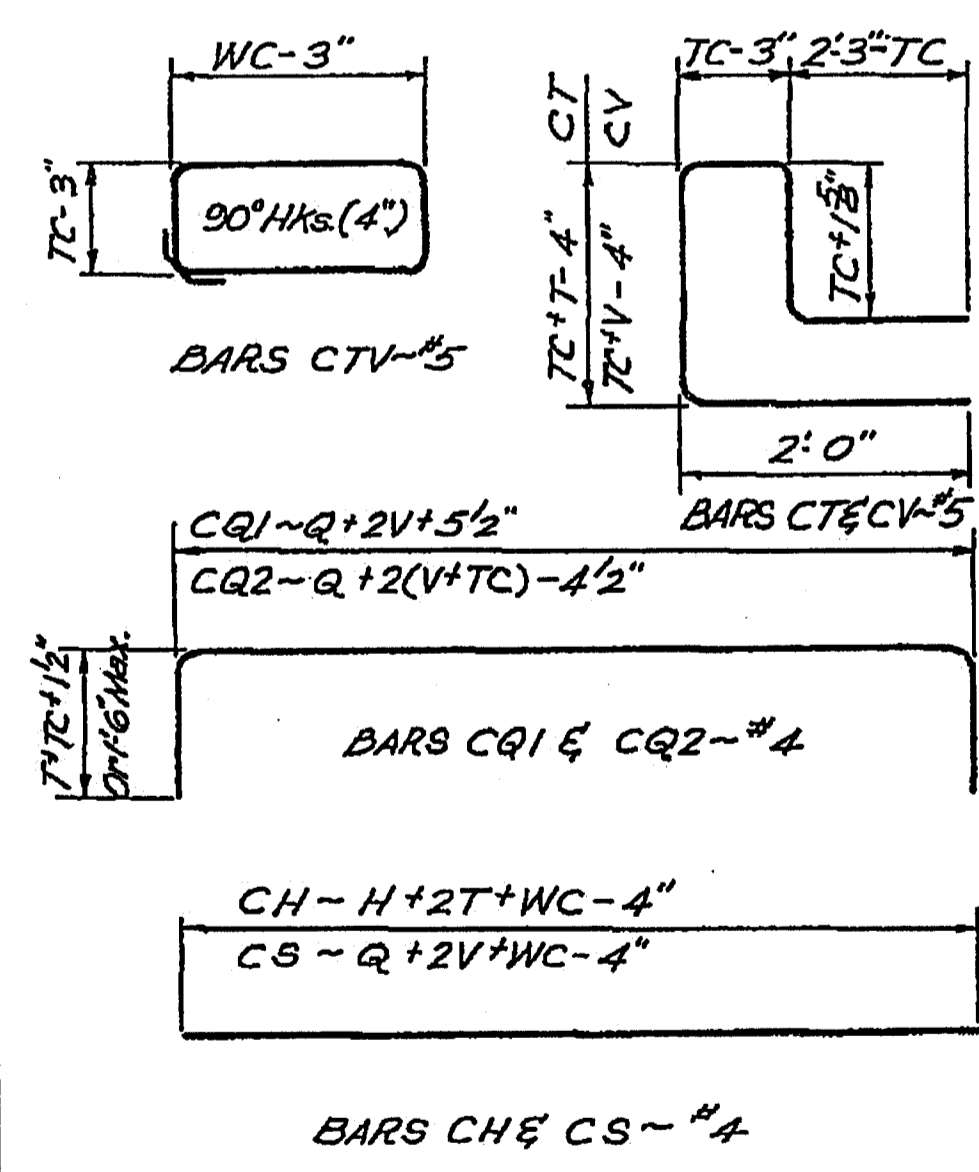
NOTE: Q For Single Cell Box = S (Clear Span), QN = S+1
 Q For Double Cell Box = 2S + V, QN = 2(S+1)
 Q For Triple Cell Box = 3S + 2V, QN = 3(S+1)
 Q For Quadruple Cell Box = 4S + 3V, QN = 4(S+1)



NOTE: For H = 4' THRU 6' TC = 9" WC = 1'-0"
 For H = 8' & Above TC = 1'-0" WC = 2'-0"

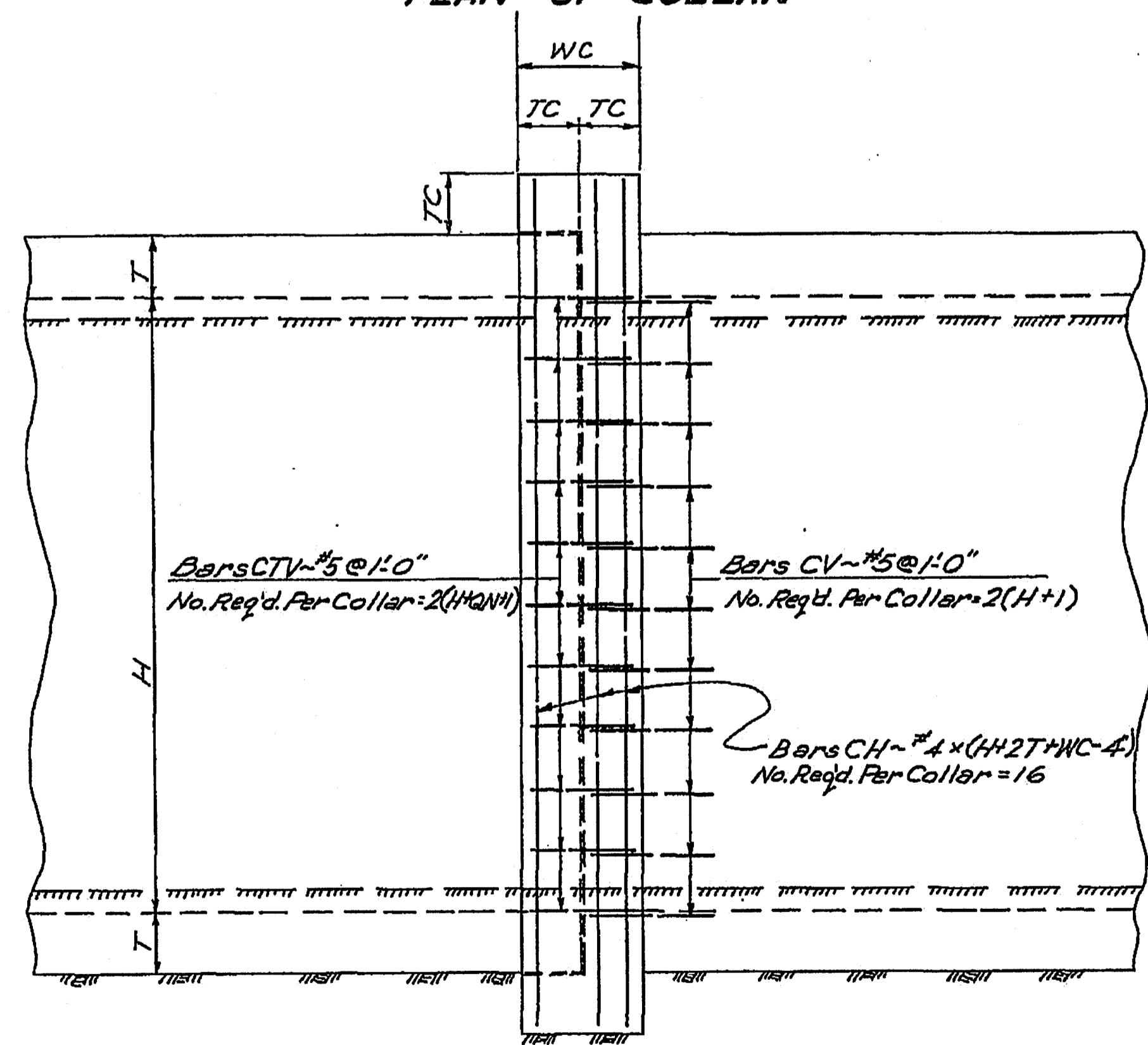
PLAN OF COLLAR

SECTION A-A

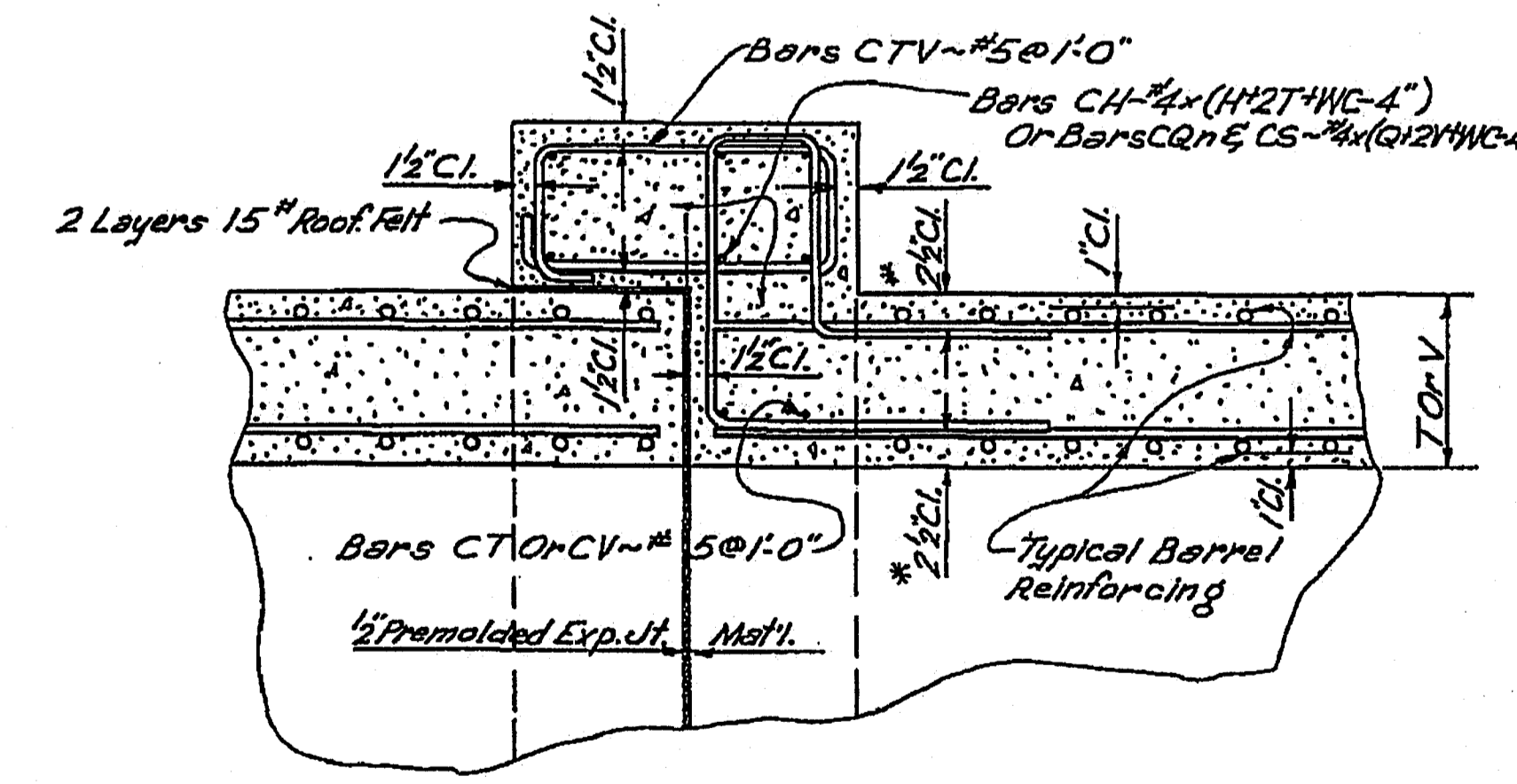


BAR BENDING DETAILS

NOTE: See * At Right



ELEVATION OF COLLAR

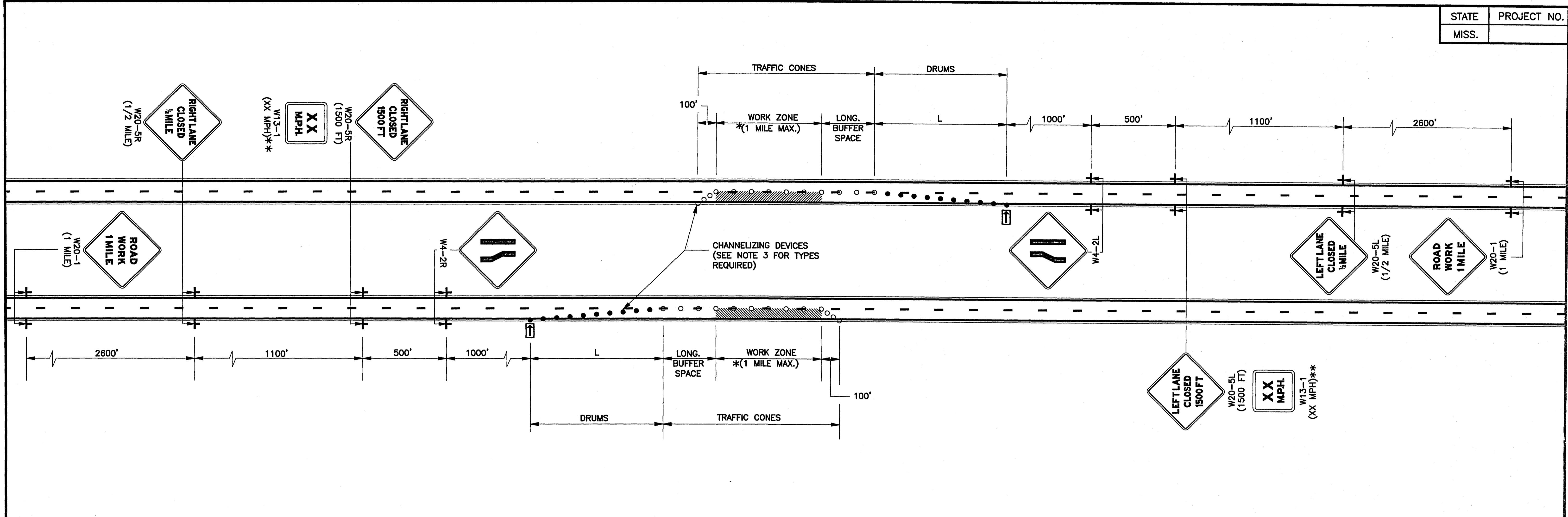


* Note: 2 1/2" CI. Based On 1" CI. For Typ. Barrel Reinf.
 This CI. Shall Be Adjusted For CI. Other Than 1"

TYPICAL SECTION OF COLLAR

GENERAL NOTES:
 This Drawing Shows The Details Necessary To Construct A Complete Collar Around Barrel At Expansion Joints For Single, Double, Triple And Quadruple Cell Box Structures.
 All Details And Requirements Not Shown Hereon Shall Be As Per Specific Drawings Or Sheets As Listed In The Plan Assembly.
 This Drawing Is Detailed For A Single Cell Box Structure And Multi-Cell Box Structures Shall Be Treated Similarly As Shown.

DESIGNED		DATE		BY	
CHECKED		DATE		BY	
ISSUED		DATE		BY	
TRACED		DATE		BY	
MISSISSIPPI STATE HIGHWAY DEPARTMENT COLLAR DETAILS FOR BOX STRUCTURES (SINGLE, DOUBLE, TRIPLE & QUADRUPLE)					
				WORKING NUMBER CJ-1 SHEET NUMBER 316	



GENERAL NOTES:

1. THE LOCATION OF CHANNELIZING DEVICES AND THE WORK AREA LAYOUT SHALL BE BASED ON THE CRITERIA IN THE FOLLOWING TABLE:


POSTED SPEED AND/OR DESIGN SPEED	MAXIMUM CHANNELIZING DEVICE SPACING (ft)		MINIMUM LONGITUDINAL BUFFER SPACE (ft)	TAPER t RATES
	TAPER	ALONG LANE LINE & WORK ZONE		
mph				
<40	40	80	170	27:1
45	45	90	220	45:1
50	50	100	280	50:1
55	55	110	335	55:1
60	60	120	415	60:1
65	65	130	485	65:1
70	70	140	575	70:1

t NOTE: TAPER RATES ARE DETERMINED USING THE FOLLOWING EQUATIONS:
 L = WS FOR SPEEDS OF 45 mph OR GREATER
 L = WS²/60 FOR SPEEDS OF 40 mph OR LESS
 WHERE: L = MINIMUM LENGTH OF TAPER IN FEET
 W = WIDTH OF OFFSET (USUALLY LANE WIDTH) IN FEET
 S = DESIGN SPEED OR 85TH PERCENTILE SPEED IN MILES PER HOUR

- FLASHING ARROW PANEL SHALL BE AS LEVEL AS POSSIBLE AS APPROVED BY THE ENGINEER. FLASHING ARROW PANEL SHOULD BE LOCATED AT THE BEGINNING OF THE TAPER OR, IF THE SHOULDER IS TOO NARROW, BEHIND THE CHANNELIZING DEVICES IN THE CLOSED LANE.
- CHANNELIZING DEVICE TYPES FOR:
 A. APPROACH TAPER- REFLECTORIZED PLASTIC DRUMS
 B. ALONG LANE LINE AND WORK ZONE- TRAFFIC CONES (28" HEIGHT)
 C. EXIT TAPER- TRAFFIC CONES (28" HEIGHT)
- WHEN THERE IS NO EXISTING HAZARD, ALL SIGNS SHALL BE COVERED OR REMOVED AND THE DRUMS SHALL BE MOVED TO THE SHOULDER EDGE AT THE END OF THE WORK DAY.
- FOR MOVING OPERATIONS (PAVING) THE CONTRACTOR SHALL HAVE TWO (2) SETS OF ADVANCE WARNING SIGNS, PLASTIC DRUMS, AND ARROW BOARD. WHEN THE CONSTRUCTION ZONE IS MOVED AHEAD, ALL SIGNS, PLASTIC DRUMS AND ARROW BOARD SHALL BE IN PLACE ON THE SECOND ZONE BEFORE REMOVING ANY SIGNS, PLASTIC DRUMS OR ARROW BOARD ON THE FIRST ZONE.
- ALL TRAFFIC CONTROL ITEMS SHOWN ON THIS SHEET WILL NOT BE MEASURED FOR SEPARATE PAYMENT. THIS WORK IS TO BE INCLUDED IN THE PRICE BID FOR MAINTENANCE OF TRAFFIC.
- DIAMOND SHAPED TRAFFIC CONTROL SIGNS SHALL BE A MINIMUM OF 48" X 48".

LEGEND

- * OR AS SHOWN ELSEWHERE OF THE PLANS.
- ** THE LEGEND ON W13-1 (XX MPH) SUPPLEMENTAL PLATE SHALL BE 10 MPH LESS THAN THE POSTED SPEED LIMIT.
- FLASHING ARROW PANEL (TYPE "C")
- REFLECTORIZED FREE-STANDING PLASTIC DRUMS
- TRAFFIC CONES (28" HEIGHT)

MISSISSIPPI DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN DIVISION STANDARD PLAN	
TRAFFIC CONTROL PLAN FOR POSTED SPEED LIMIT LESS THAN 65 MPH (4-LANE; MEDIAN LANE OR OUTSIDE LANE CLOSURE) (WORK DAY ONLY)	
WORKING NUMBER TCP-2	 SHEET NUMBER 251
ISSUE DATE: OCTOBER 1, 1998	

BURNS, COOLEY, DENNIS, INC.
GEOTECHNICAL AND MATERIALS ENGINEERING CONSULTANTS

Corporate Office 551 Sunnybrook Road Ridgeland, MS 39157 Phone: (601) 856-9911 Fax: (601) 856-9774	Mailing Address Post Office Box 12828 Jackson, MS 39236 www.bcdgeo.com	Materials Laboratory 278 Commerce Park Drive Ridgeland, MS 39157 Phone: (601) 856-2392 Fax: (601) 856-3592
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Lake Harbour Crossing Investments, LLC
603 Eastwyck Place
Ridgeland, Mississippi 39157

Attention: Mr. Walter L. Baker

**Geotechnical Investigation
Roadway Borings
Harbour Pointe
Ridgeland, Mississippi**

April 25, 2007

Project No. 070237

Gentlemen:

Submitted here is the report of our geotechnical investigation made for the proposed roadway of the Harbour Pointe commercial development in Ridgeland, Mississippi. These services were requested and authorized by Mr. Horace Lester on April 2, 2007.

General

We understand that plans are being made to construct a roadway for the Harbour Pointe commercial development in Ridgeland, Mississippi. The proposed development is located east of Old Canton Road and south of Lake Harbour Drive, and consists of a single primary street. The new street will be approximately 1,800 feet in length and connects Old Canton Road with Lake Harbour Road. A plan of the proposed development area showing the street layout is presented on Figure 1 of this report. The new street will be constructed as a flexible pavement with curb and gutter.

At the time of our field investigation the street had been staked through thick heavy woods. The ground surface along the centerline of the proposed street was generally dry and stable except for some near surface soils in poor drainage areas. Burns Cooley Dennis, Inc. was not furnished finish grade elevations or profile of the proposed street; however, we understand finished pavement grades will approximately follow the existing ground surface as much as possible with minimal filling or grading.

RIDGELAND ■ HATTIESBURG ■ BILOXI ■ MEMPHIS

General Soil Conditions

Subgrade soil conditions revealed by the borings for the proposed street are discussed in the following paragraphs. The graphical logs shown on Figures 3 through 10 should be referenced for specific soil conditions encountered at each individual boring location. At the time of our investigation (April 2007), the near surface soils were generally found to be dry and stable, except at Borings 1, 5, and 8 which are considered weak and unstable due to high moisture contents. The wet soils extend to an approximate depth of 2 ft at Borings 1 and 8 and 6 ft at Boring 5.

A description of general subgrade soil conditions revealed by the borings made for this investigation is included in the following paragraphs. The graphical logs shown on Figures 3 through 10 should be referred to for specific soil conditions encountered at each boring location. In general, subgrade soils within the exploration depths of the borings made for this investigation were found to consist of silty clays (CL), sandy clays (CL), sands (SC), clays (CH), and weathered Yazoo clays (CH).

The silty clay (CL) and sandy clay (CL) soils were found to range from medium stiff to hard with respect to consistency. The silty clay (CL) and sandy clay (CL) soils classified as stiff to hard are considered to provide fair subgrade support. The silty clay (CL) and sandy clay (CL) soils are considered to have low shrink/swell potential and can provide adequate pavement subgrade support if these soils have adequate compaction and demonstrate stability. The silty clay (CL) and sandy clay (CL) soils are susceptible to pumping when subjected to repeated passes of rubber-tired equipment and the moisture conditions are above optimum. The AASHTO classifications for the CL soils are A-6 and A-7-6. The silty clays (CL) and sandy clays (CL) are considered to be nonexpansive.

The sands (SC) were found to be dense with respect to consistency. The sands (SC) are considered to provide fair to good subgrade support. The sands (SC) are considered to have low shrink/swell potential and can provide adequate pavement subgrade support if these soils have adequate compaction and demonstrate stability. The AASHTO classifications for the SC soils are A-4. The sands (SC) are considered to be nonexpansive.

The expansive clays (CH) were found to be very stiff and hard with respect to consistency and are considered to have moderate strength and low compressibility at the in-situ moisture contents. The clay (CH) soils are considered to be expansive with moderate to very high shrink/swell potential. The clay (CH) soils are considered to provide poor pavement subgrade support and can experience significant strength loss with an increase in moisture content and are not suitable for design subgrade soils (top 3 ft of pavement subgrade). The clay (CH) soils are not acceptable borrow materials.

The specific purposes of this investigation were:

- 1) to explore subgrade soil conditions along the proposed alignment of the street;
- 2) to explore soils within the proposed detention pond area for potential borrow;
- 3) to evaluate pertinent physical properties of the subgrade soils and potential borrow soils encountered by means of visual examination and routine laboratory tests performed on selected samples obtained from the borings; and
- 4) after analysis of the soil boring and laboratory test data, to provide guideline recommendations for subgrade construction, suitability of potential borrow soils, and to provide guideline recommendations for asphalt pavement design and construction.

Field Investigation

Subgrade soil conditions along the alignment of the proposed street were investigated by means of six (6) borings. In addition, two (2) borings were taken within a proposed storm detention area to evaluate the suitability of the subsurface soils for potential borrow material. All borings were taken using a tractor-mounted drill rig and a 4 in. diameter short flight auger. The approximate boring locations are illustrated on Figure 1. All soils were classified in general accordance with the Unified Soil Classification System (USCS). A legend is shown on Figure 2 which presents a summary of the USCS and also symbols and terminology typically utilized on graphical soil boring logs. Graphical logs of the borings indicating the types of soil and stratification encountered at the individual boring locations are included in this report as Figures 3 through 10.

The borings were advanced to completion depths of 10 and 15 ft. Observations were made continuously during auger drilling to detect any groundwater seepage entering the open boreholes. Notes pertaining to groundwater observations are included at the bottom right corner of the graphic boring logs.

All soils encountered during drilling were examined and classified in the field with respect to composition, consistency and relative density by a geotechnical engineering technician. Representative disturbed samples of the subgrade soils were taken directly from auger cuttings at approximate 2-ft to 3-ft intervals of depth, placed in plastic jars, and sealed to prevent moisture loss and to provide material for visual examination and testing in the laboratory. The actual depths at which the auger cutting samples were taken are illustrated as I-shaped symbols under the "Samples" column of the graphic boring logs. After completion of drilling and sampling, the boreholes were filled with soil cuttings.

Laboratory Investigation

An evaluation of the strengths and expansive properties of the subgrade soils encountered in the borings was considered to be of primary importance to this investigation. All of the soil samples were visually examined in the laboratory by a geotechnical engineering technician and routine tests were performed on selected representative samples from the borings to verify field

classifications and to assist in evaluating the strengths, expansive properties and classifications of the soils encountered. The types of laboratory tests performed are described below.

The classifications and expansive properties of the fine-grained soils encountered in the borings were investigated by means of visual examination and eight (8) sets of Atterberg liquid and plastic limit tests. The numerical difference between the liquid limit and the plastic limit is defined as the plasticity index (PI). The results of the liquid and plastic limit tests performed for this investigation are plotted as small crosses interconnected by dashed lines in the data section of the graphic boring logs. The magnitudes of the liquid limit and the plasticity index and the proximity of the natural water content to the plastic limit are indicators of the potential for a clay soil to shrink or swell upon changes in moisture content or to consolidate under loading. The proximity of the water content to the plastic limit is an indicator of soil strength. Atterberg limit tests are also useful in estimating subgrade CBR values.

Water content tests were performed on all forty six (46) samples to corroborate field and laboratory estimates of consistency and density and to extend the usefulness of the plasticity data. The results of the water content tests are plotted as small shaded circles in the data section of the graphic boring logs. The water content data have been interconnected on the graphic logs to show a continuous water content profile throughout the depth of each boring.

The results of the laboratory tests were utilized to verify the field classifications by the Unified Soil Classification System (USCS) method and also to classify the soil samples by the AASHTO method (M 145-82). The classifications and the laboratory test results were then used to estimate the CBR for each of the soil types using the Mississippi Department of Transportation (MDOT) recommended procedures for estimating CBR. A summary of the estimated CBRs for each soil type encountered is presented in Table 1. It should be understood that these CBR values are appropriate for design only if subgrade preparation and compaction are performed in accordance with recommendations provided and adequate surface drainage is provided.

**TABLE 1
Summary of Design CBR Values for Subgrade Soils
Proposed Street in
Harbour Pointe
Ridgeland, Mississippi**

Soil Type	USCS Classification	AASHTO Classification	Estimated Design CBR Values
Silty and Sandy Clay	CL	A - 6 / A - 7 - 6	5
Sands	SC	A - 6	10
Clay	CH	A - 7 - 6	3

Note: Highly expansive clay (CH) soils are not acceptable design soils.

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Free water was not encountered during dry auger drilling at any of the boring locations within the exploration depths of the borings. In our opinion, groundwater conditions along the alignment of the proposed street will primarily be influenced by rainfall and surface drainage. The subgrade soils can become saturated and weak during periods of prolonged and heavy rainfall.

Discussion and Recommendations

General. The predominant near surface soil type within the proposed street is nonexpansive silty clays (CL). Expansive clays (CH) were encountered at varying depths below the ground surface at Borings 1, 3, and 5 along the roadway alignment. Expansive clays (CH) were also encountered in both borrow borings at a depth of 6.5 ft at Boring 7 and at a depth of 8 ft at Boring 8.

From a geotechnical standpoint, the primary factors relevant to the design and construction of the proposed street are the strength and expansive properties of the subgrade soils. As indicated previously, expansive clay (CH) soils were encountered at various depths at Borings 1, 3, and 5. The practice common to Madison County should clay (CH) materials be encountered has been to provide a minimum 3-ft thickness of select nonexpansive materials between the expansive clays (CH) and the overlying pavement structure. Therefore, we recommend a 3-ft layer of relatively strong nonexpansive clayey (CL) material be maintained between the bottom of the pavement section and any expansive clay (CH) soils. The minimum 3-ft buffer is in place provided that grading below the natural ground surface does not exceed 0.5 ft at Boring 1.

Site Preparation and Earthwork Construction. As an initial step of site preparation, trees located along the alignment of the street should be removed. Tree removal should include stumps and root systems. Holes created as a result of stump removal should be backfilled and compacted with select fill soils. After tree removal, stripping should be performed to a sufficient depth along the street to remove organic laden surficial soils, vegetation, debris, brush and roots. Excavation should then be conducted to remove weak materials and any soils loosened as a result of tree removal.

The soils exposed after stripping should be scarified to a minimum depth of 12 in. and compacted to not less than 95 percent of standard Proctor maximum dry density (ASTM D 698) with stability present. Alternatively, the exposed CL soils could be proctorfelled with a loaded dump truck to demonstrate stability. Stability is defined as the absence of significant pumping or yielding of soils during compaction and proctorfelling. If stability is not evident in some areas, either additional excavation, or treatment of the in situ soils with an admixture, or a combination of these approaches, might be required to achieve stable conditions.

It should be noted that strong silty clays (CL) are susceptible to pumping under wet conditions. The construction techniques and types of equipment utilized and site drainage provided during construction will have a great effect on the performance of these soils

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REVISION	BY	DATE

throughout the project. The routing of heavy rubber-tired equipment should be controlled to minimize, as much as possible, traffic over the site. Rutting produced by rubber-tired traffic should be minimized. All traffic should be discouraged during periods of inclement weather. If pumping is initiated in the subgrade soils, as a construction expedient the pumping can often be counteracted by treating these materials with 4 to 6 percent hydrated lime by dry weight of soil.

After excavation to achieve subgrade elevations, scarification and compaction and/or proofrolling have been performed as recommended in the preceding paragraphs; select fill materials can be placed to achieve planned subgrade elevations. Any expansive clays (CH) removed during excavation should not be used as select fill under the new pavements. On site silty clay (CL) soils that are debris-free and not too wet can be used as select fill. Fill and backfill materials should consist of select nonorganic, debris-free, silty clays (CL) or sandy clays (CL) having a liquid limit less than 45 and a plasticity index (PI) within the range of 10 to 24. The fill materials should be spread in loose lifts having a maximum thickness of 9 in. and compacted to not less than 95 percent of standard Proctor maximum dry density (ASTM D 698) at moisture contents within 3 percentage points of the optimum moisture content. Stability must be evident during compaction of each lift before any subsequent lifts of fill materials are added. In addition to density requirements, the final layer of fill material should be proofrolled with a loaded dump truck to demonstrate stability after compaction requirements have been achieved. Finished site grades should be sloped to provide for quick runoff of storm waters.

We recommend that field moisture/density tests be performed in areas requiring undercutting and backfilling. As a guide, the minimum density testing program is recommended to consist of one test per lift per 250 ft of new pavement. Classification tests should be performed on select fill soils initially and routinely during subgrade preparation.

Asphalt Pavement Recommendations. In areas to be paved, there is often some delay between completion of earthwork operations and placement of the pavement structure materials, possibly resulting in deterioration of subgrade conditions. Thus, we recommend that the density and stability of the subgrade soils be confirmed or reestablished immediately prior to construction of the pavement.

We understand the street within the Harbour Pointe commercial development will be subjected to moderate commercial traffic. Based on this, the following paragraph represents local construction practice for the City of Ridgeland pavements subjected to lightly loaded automobile and small truck traffic with moderately heavy commercial truck traffic. It is our opinion that a CBR of 5 would be appropriate for flexible asphalt concrete pavement design. It should be understood that the CBR value is appropriate for design only if the subgrade soils are prepared and select fill materials are placed within the area to be paved in accordance with recommendations given previously.

For a commercial street subjected to relatively light passenger car and pickup truck traffic with moderately heavy commercial truck traffic, the flexible pavement structure should consist of a full-depth asphalt concrete pavement. The full-depth asphalt pavement should consist of a 4-in. layer of bituminous base (BB-1) overlain by a 3-in. thick asphalt surface course (SC-1).

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The surface should be placed in two 1.5 in. layers. We recommend that the top 12 in. of the subgrade soils be lime treated to produce a strong, weather resistant subgrade platform for the asphalt pavement. We recommend lime treatment utilizing 6 percent hydrated lime by dry weight of soil. The lime treatment should be in accordance with Section 307 of the Mississippi Standard Specifications for Road and Bridge Construction, 1990 Edition, using the Class C lime treatment procedure. If lime treatment is not utilized, the bituminous base should be 5 in. The asphalt concrete base materials should conform to all applicable specifications for BB-1, Type 6 presented in the 1990 Edition of the Mississippi Department of Transportation (MDOT) specifications. The asphalt concrete surface course should conform to all applicable specifications for SC-1, Type 8, presented in the 1990 Edition of MDOT specifications.

Report Limitations

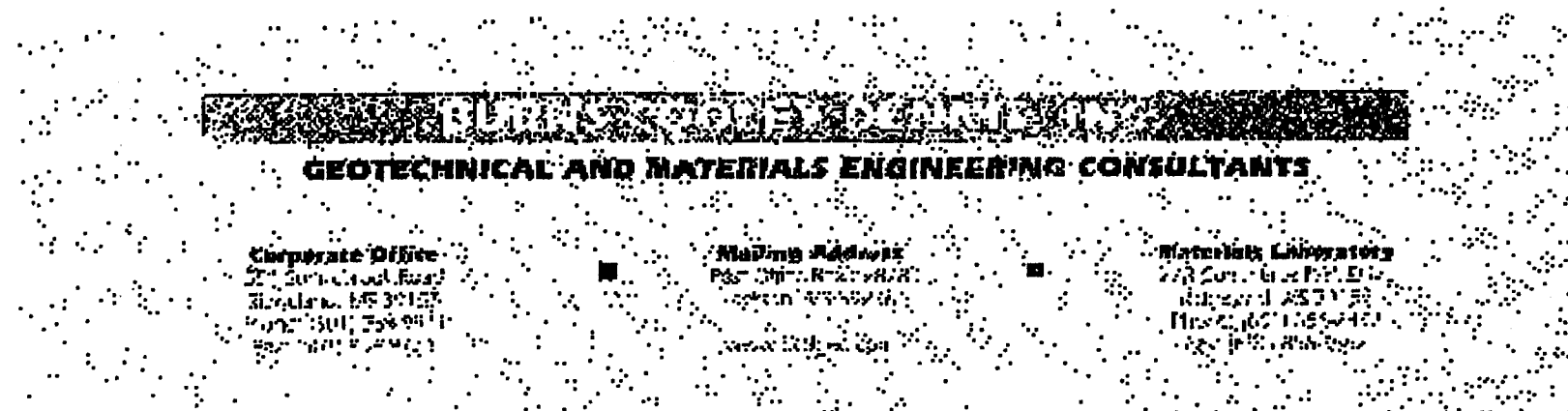
The analyses, conclusions and recommendations discussed in this report are based on conditions as they existed at the time of our field investigation and further on the assumption that the exploratory borings are representative of subgrade conditions along the proposed street. It should be noted that actual subgrade conditions between and beyond the borings might differ from those encountered at the boring locations. If subgrade conditions are encountered during construction that vary from those discussed in this report, Burns Cooley Dennis, Inc. should be notified immediately in order that we may evaluate the effects, if any, on design and construction.

Burns Cooley Dennis, Inc. should be retained for a general review of final design drawings and specifications. It is advised that we be retained to observe earthwork and pavement construction for the project in order to help confirm that our recommendations are valid or to modify them accordingly. Burns Cooley Dennis, Inc. cannot assume responsibility or liability for the adequacy of recommendations if we do not observe construction.

This report has been prepared for the exclusive use of Lake Harbour Crossing Investments, LLC of Ridgeland, Mississippi for specific application to the geotechnical-related aspects of pavement design and construction for the Harbour Pointe commercial development in Ridgeland, Mississippi. The only warranty made by us in connection with the services provided is we have used that degree of care and skill ordinarily exercised under similar conditions by reputable members of our profession practicing in the same or similar locality. No other warranty, express or implied, is made or intended.

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BURNS COOLEY DENNIS, INC.



Memorandum

To: Horace Lester, Jr. D.E.
Fairview Development Services

From: R. C. Ahlrich, Ph.D., P.E. *RCA*

Date: May 16, 2007 BCD Project No. 070237

Subject: Asphalt Pavement Alternative
Harbour Pointe
Ridgeland, Mississippi

This memo is submitted to provide alternative pavement design recommendations for the above-referenced project. Our findings from the geotechnical investigation and our recommendations for site preparation, earthwork construction, and asphalt pavement construction were previously submitted in our Report No. 070237 dated April 25, 2007.

Since stage construction is going to be implemented on this project, it is our opinion that the asphalt pavement structure needs to be modified. We recommend that the subgrade soils be lime treated to a depth of 8 in. with 6 percent hydrated lime. The full-depth asphalt pavement should consist of 5 in. of asphalt base (BB-1) and 3 in. of asphalt surface (SC-1). The asphalt base and asphalt surface courses should be placed in two equal layers (base 2.5 in layers and surface 1.5 in. layers). We understand the final surface layer will not be placed for 1 to 2 years.

MEMPHIS ■ HATTIESBURG ■ TULSA ■ MEMPHIS

We appreciate the opportunity to be of service. If you should have any questions concerning this report, please do not hesitate to call us.

Very truly yours,

BURNS COOLEY DENNIS, INC.

Jimmy W. Brumfield
Jimmy W. Brumfield, P.E., P.L.S.

R. C. Ahlrich

R. C. Ahlrich, Ph. D., P.E.

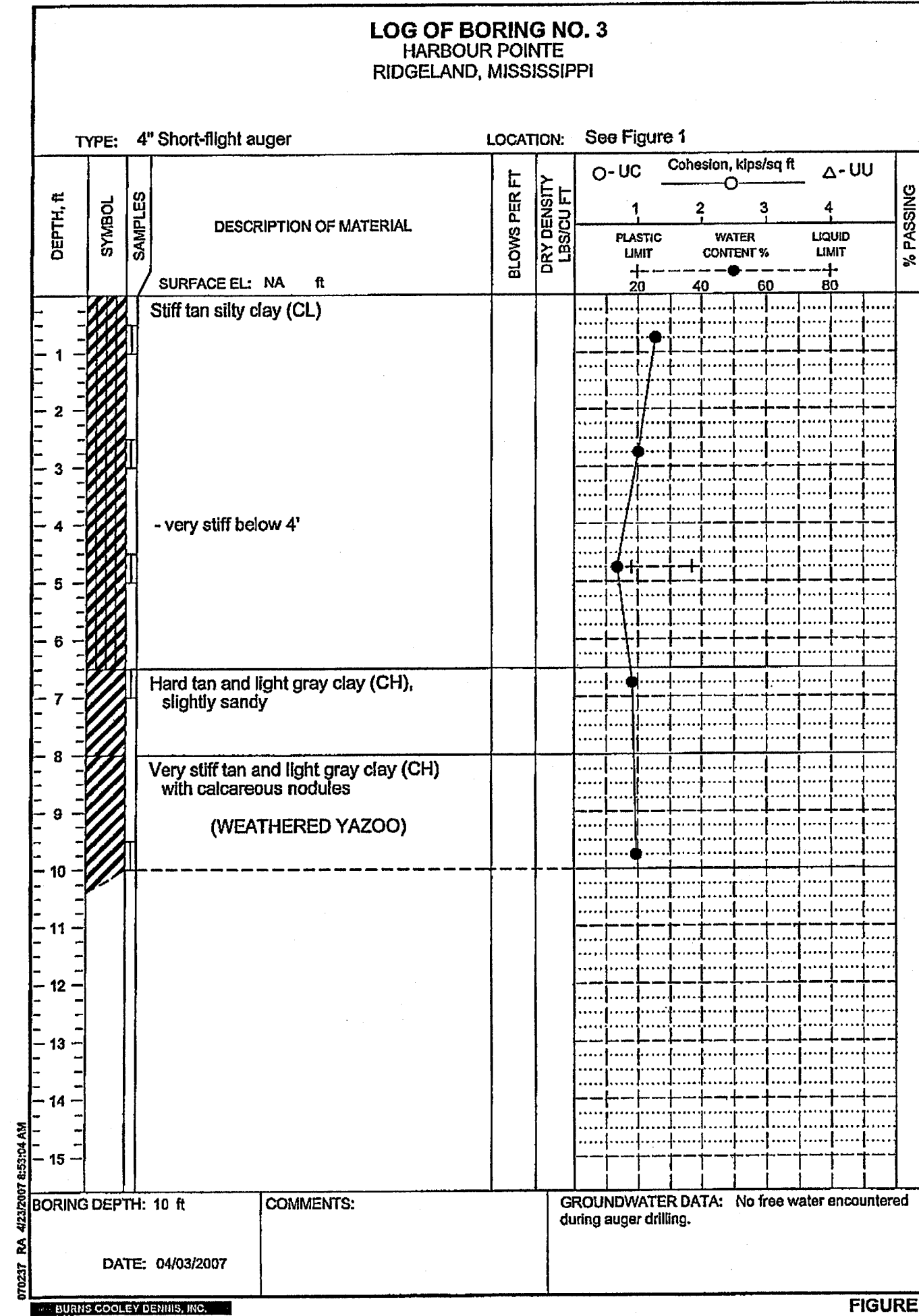
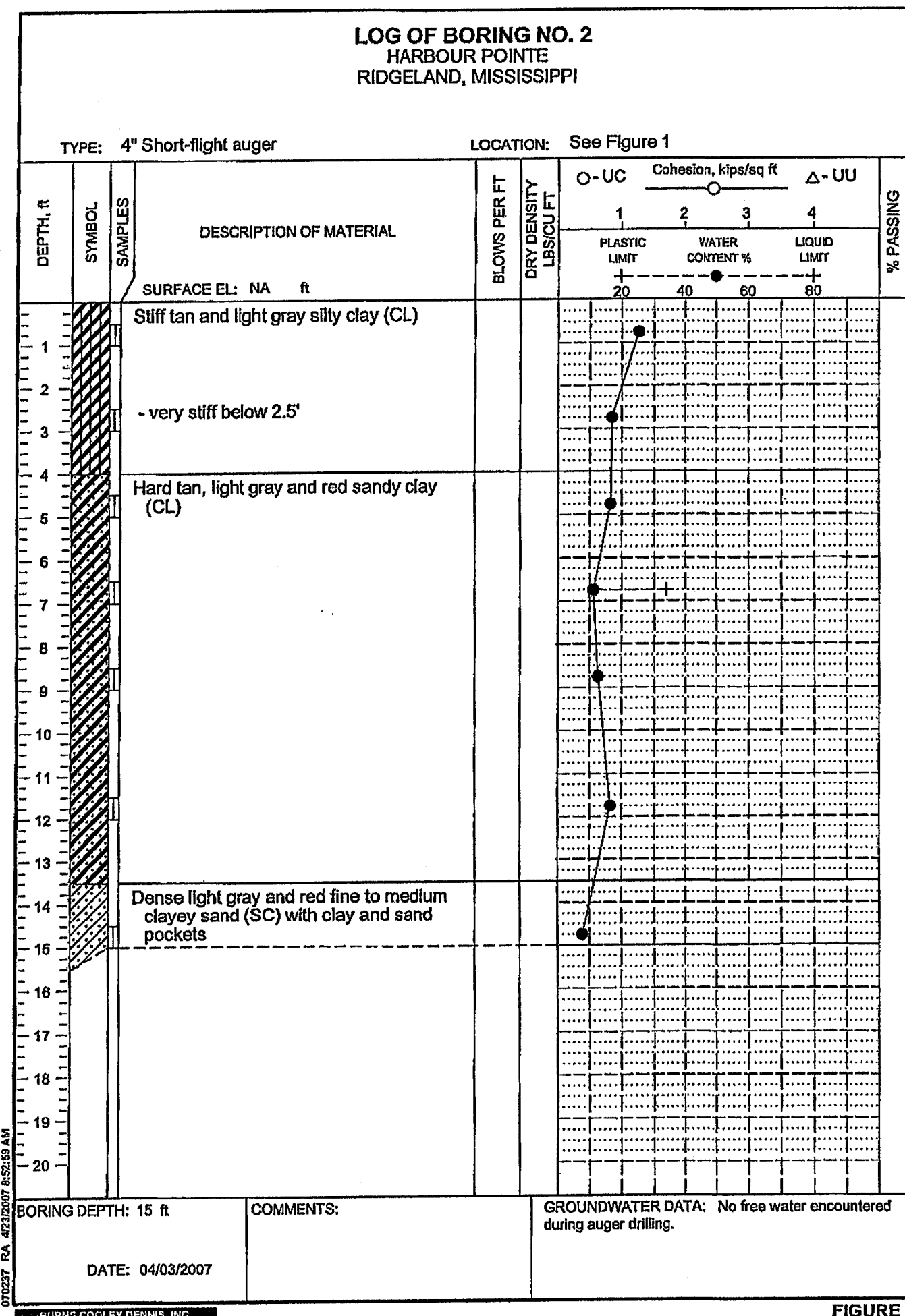
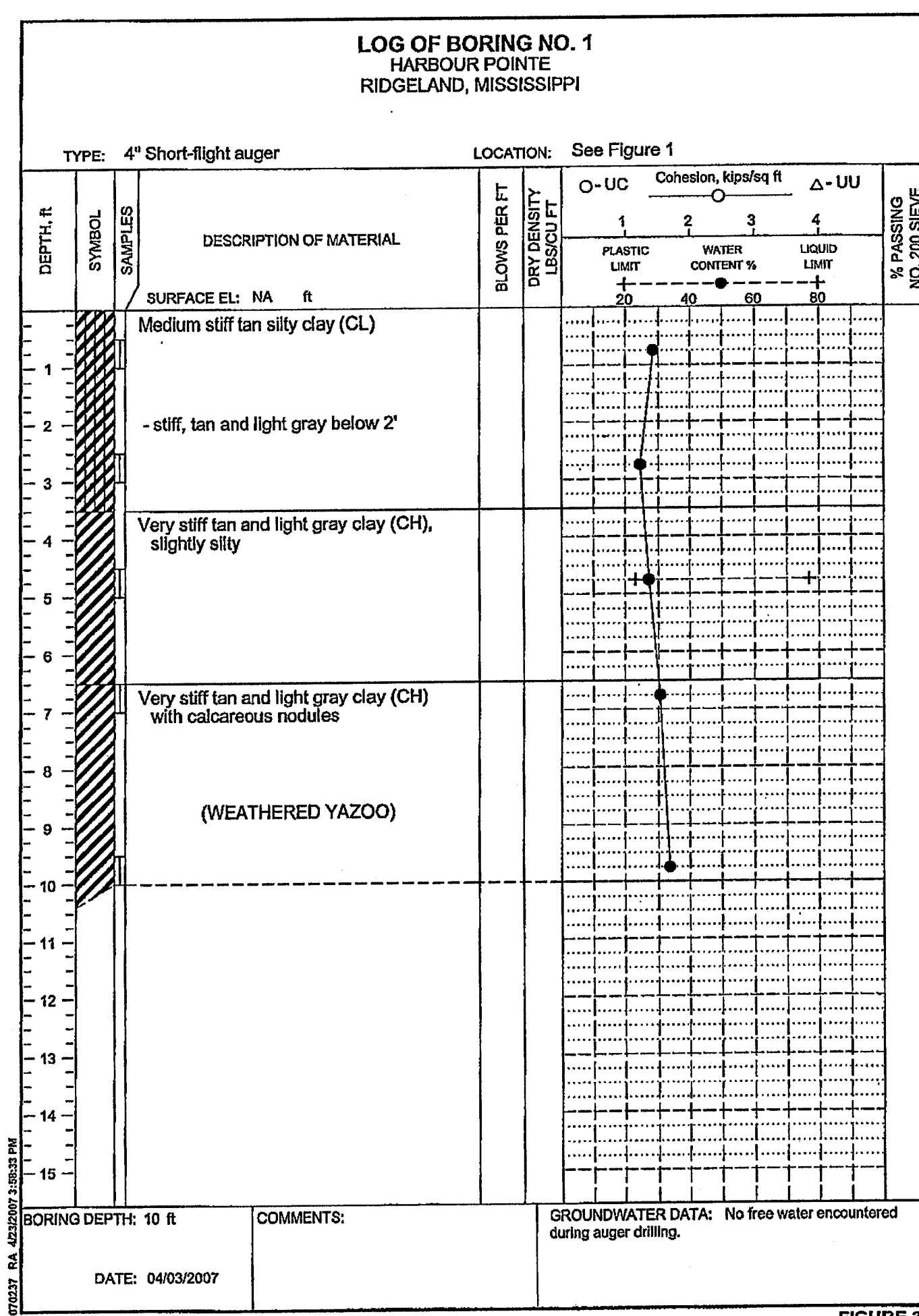
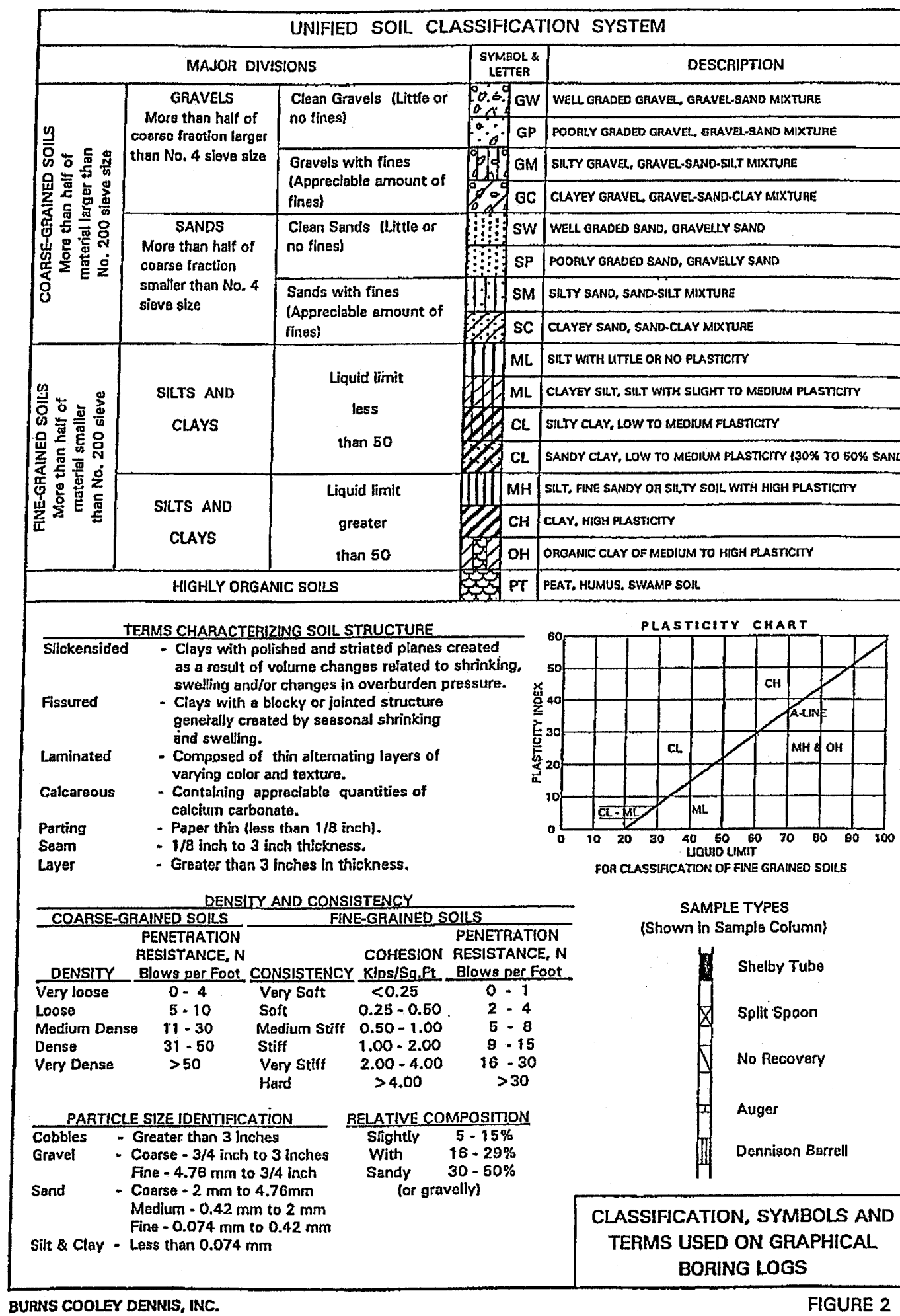
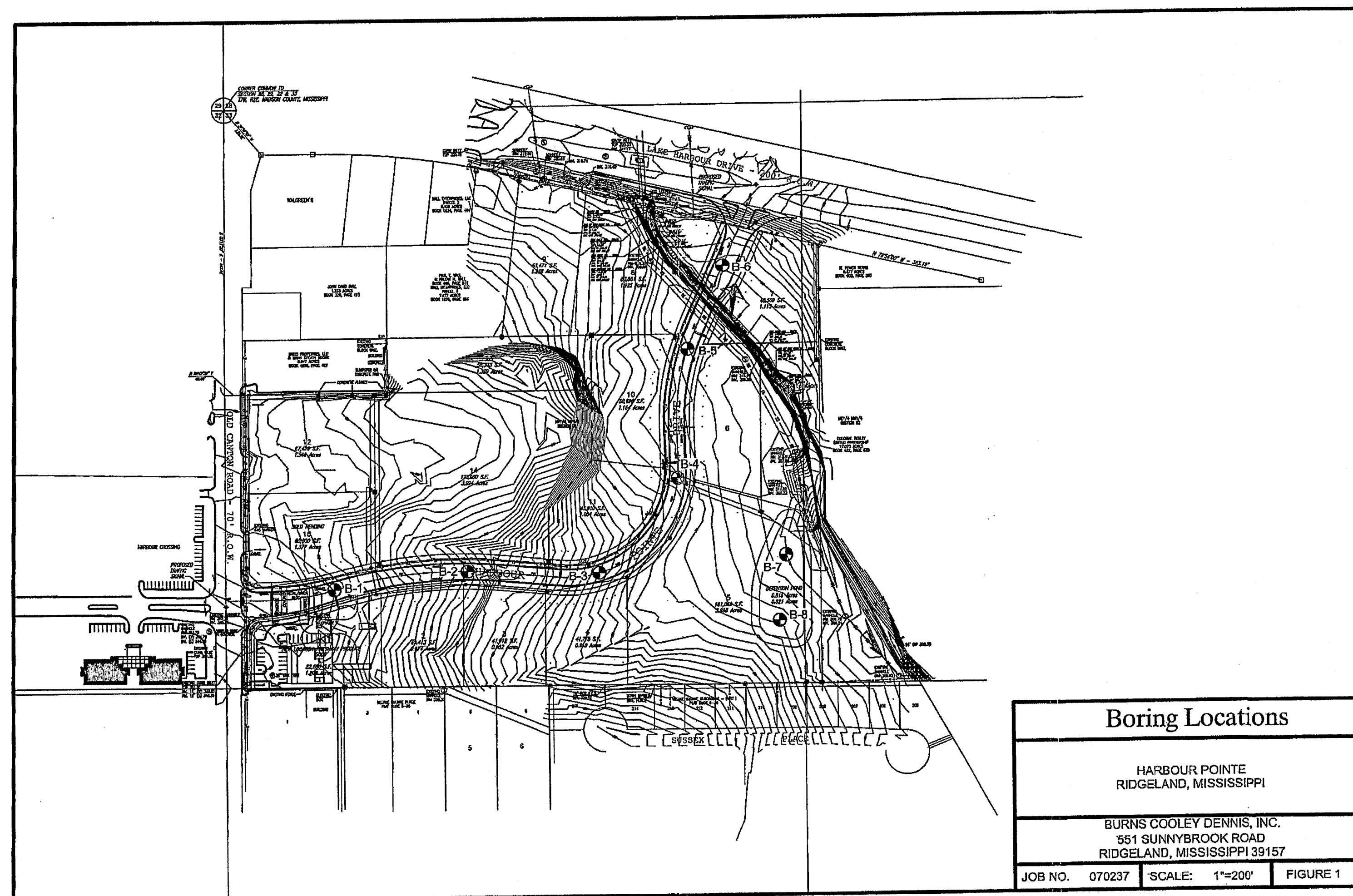
JWB/RCA/jlg
Copies Submitted: (3)

Cc: Mr. Horace Lester, P.E.

8

BURNS COOLEY DENNIS, INC.

Boring Report	
HARBOUR POINTE MADISON COUNTY, MISSISSIPPI	
BURNS COOLEY DENNIS, INC. 551 SUNNYBROOK ROAD RIDGELAND, MISSISSIPPI 39157	
JOB NO. 070237	DRAWING NO.
SCALE: AS SHOWN	2 of 4



Boring Locations & Boring Logs

**HARBOUR POINTE
MADISON COUNTY, MISSISSIPPI**

**BURNS COOLEY DENNIS, INC.
551 SUNNYBROOK ROAD
RIDGELAND, MISSISSIPPI 39157**

JOB NO. 070237	STERLING Consultants	DRAWING NO. 3 OF 4
SCALE: AS SHOWN	CONSULTANTS	
FIGURES 1-10		

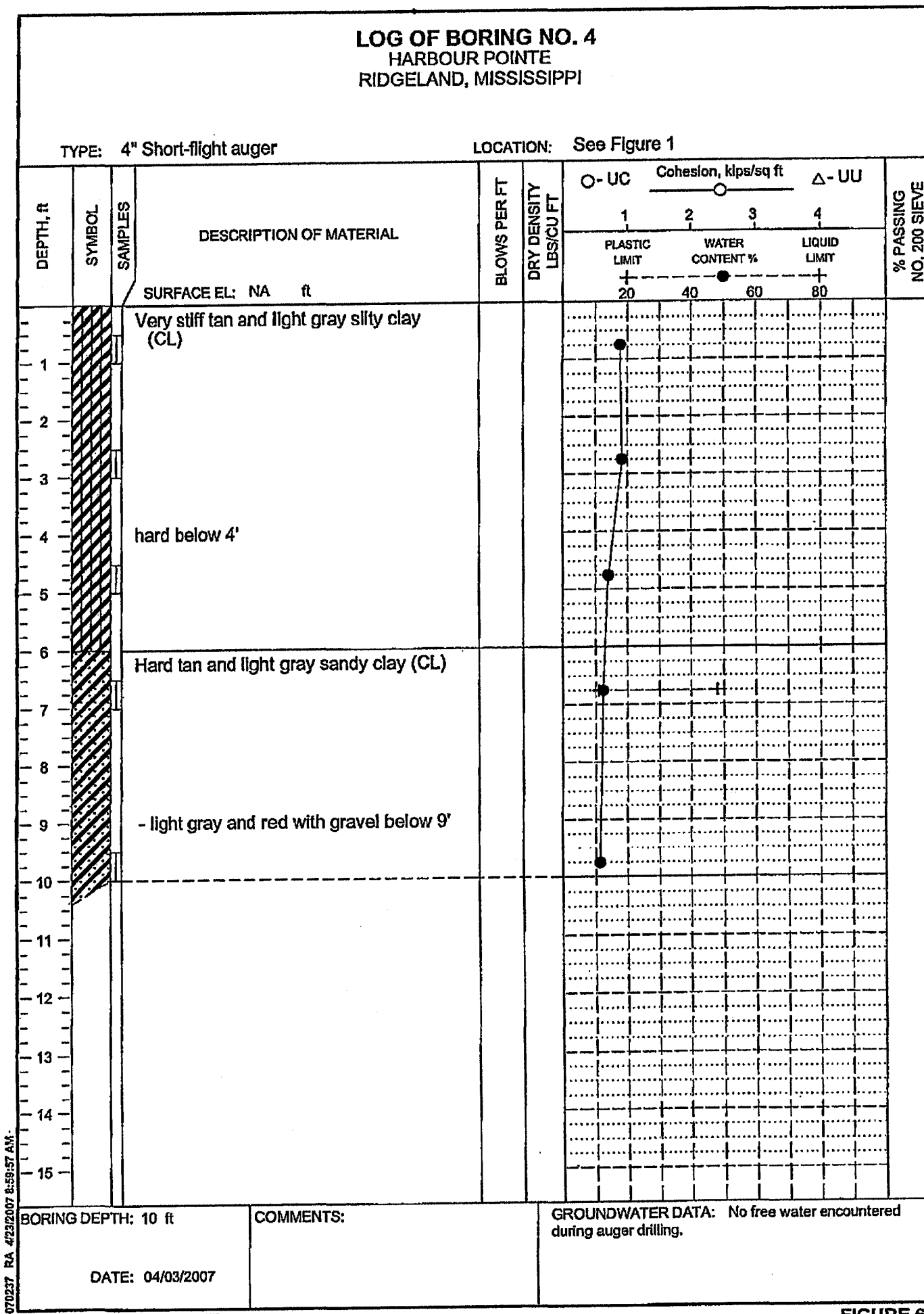


FIGURE 6

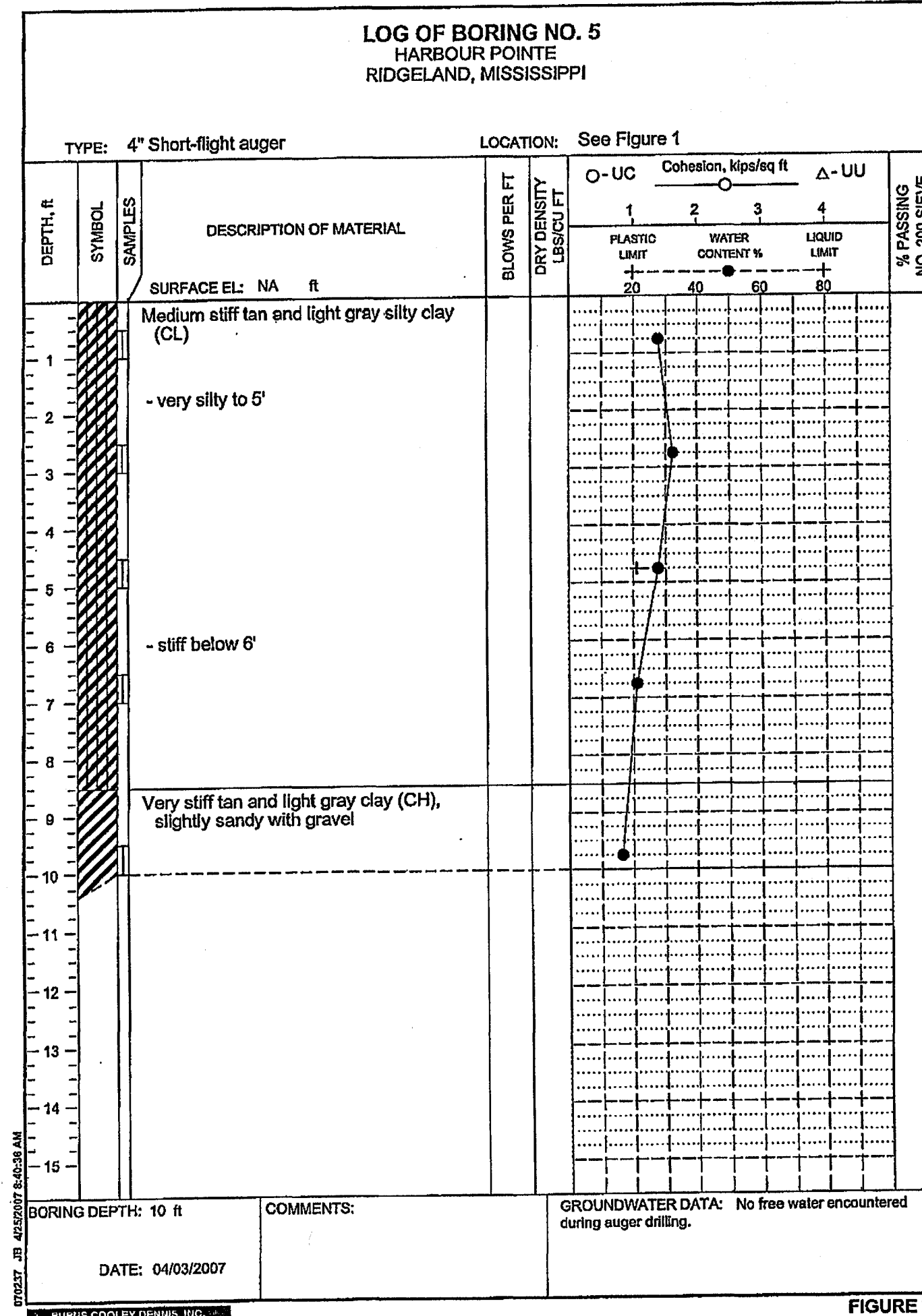


FIGURE 7

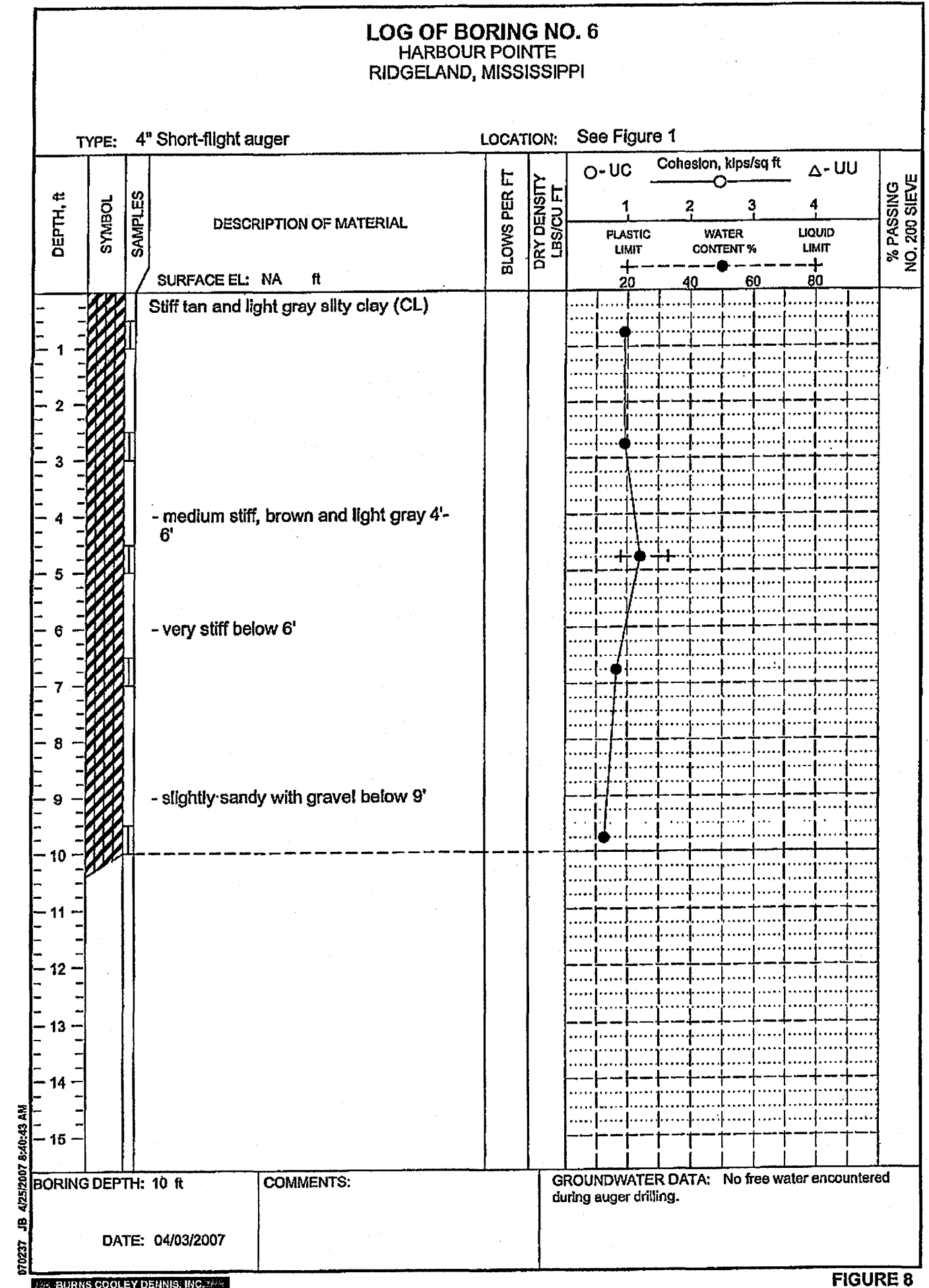


FIGURE 8

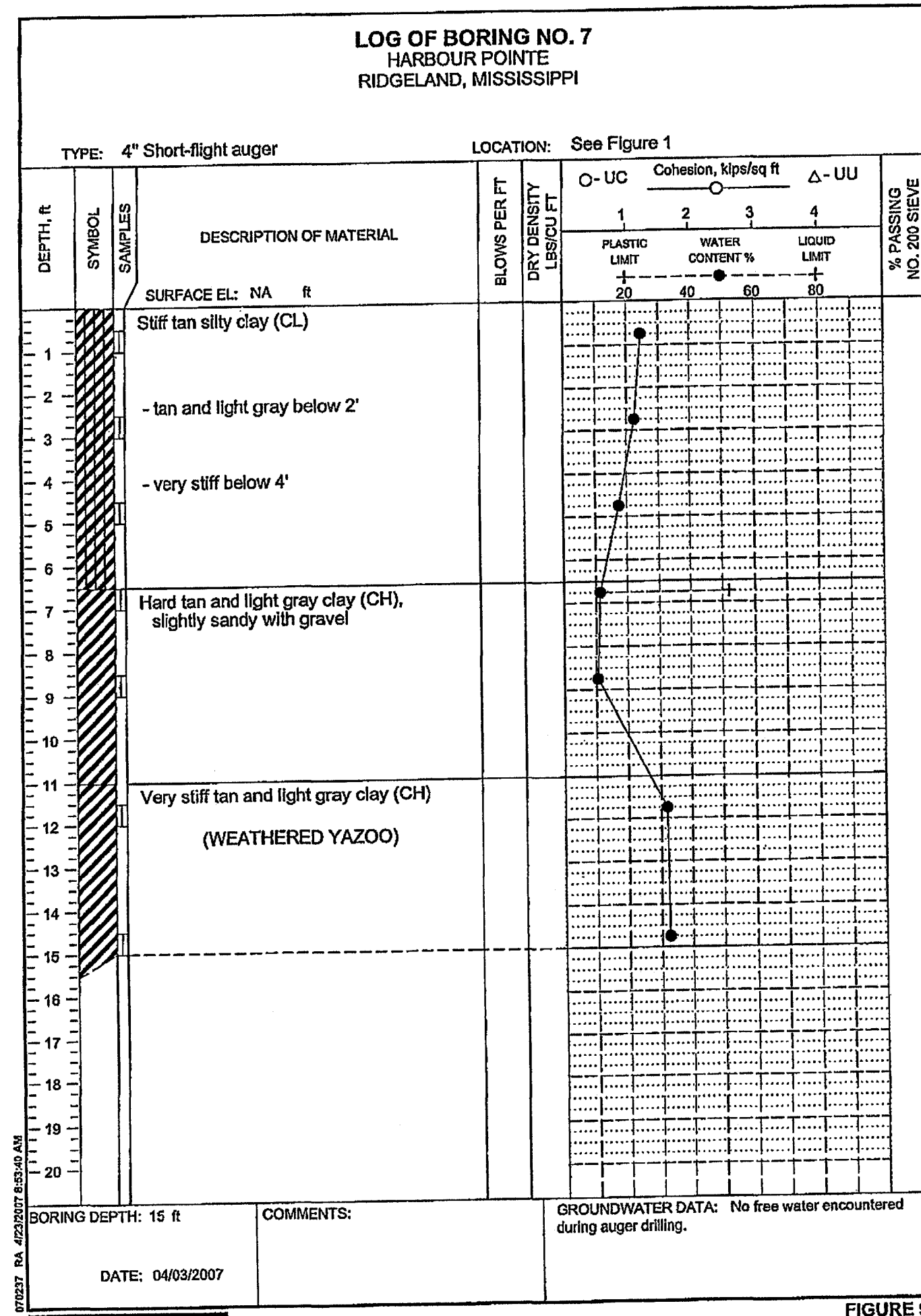


FIGURE 9

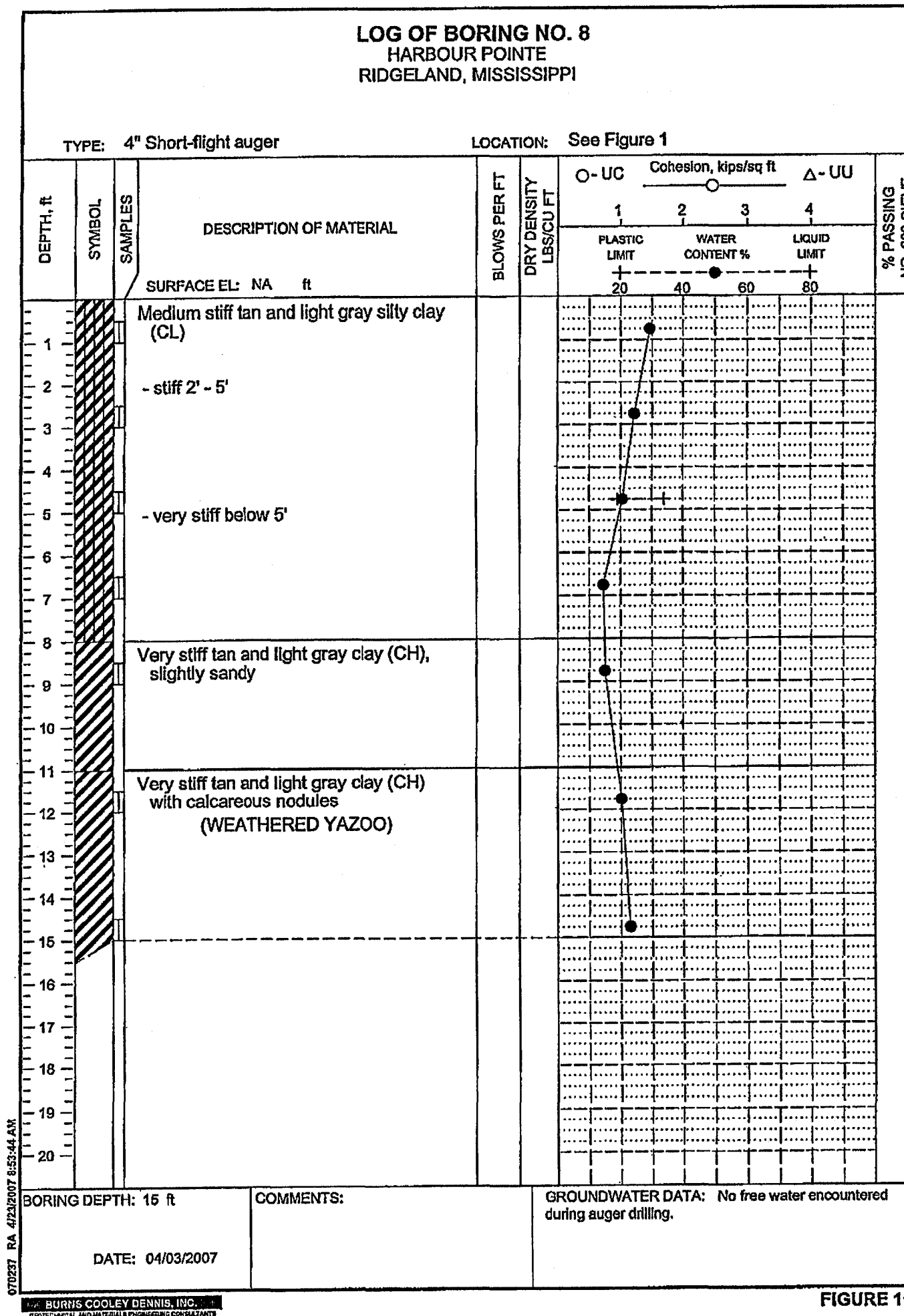


FIGURE 10

Boring Logs

**HARBOUR POINTE
MADISON COUNTY, MISSISSIPPI**

**BURNS COOLEY DENNIS, INC.
551 SUNNYBROOK ROAD
RIDGELAND, MISSISSIPPI 39157**

JOB NO. 070237
SCALE: AS SHOWN
FIGURES 1-10



DRAWING NO. **4 OF 4**