

Bryan W. Shaw, Ph.D., *Chairman*
Carlos Rubinstein, *Commissioner*
Toby Baker, *Commissioner*
Zak Covar, *Executive Director*



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OCT 18 2012

COUNTY ENGINEER

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

October 10, 2012

Mr. Michael L. Schoenfeld
DHJB Development, LLC
13000 US Highway 290 W
Austin, Texas 78737

Re: Edwards Aquifer, Comal County

NAME OF PROJECT: **Johnson Ranch**; Located at the northeast corner of the intersection of US 281 and FM 1863; Bulverde, Texas

TYPE OF PLAN: Request for Modification of an Approved Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer

Edwards Aquifer Protection Program ID No. 2702.04; Investigation No. 1029039; Regulated Entity No. RN105332522

Dear Mr. Schoenfeld:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP Application for the above-referenced project submitted to the San Antonio Regional Office by Loomis Austin, Inc. on behalf of DHJB Development, LLC on August 20, 2012. Final review of the WPAP was completed after additional material was received on September 28, 2012. As presented to the TCEQ, the Temporary and Permanent Best Management Practices (BMPs) and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are **hereby approved** subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

The original Johnson ranch WPAP was approved by letter dated October 24, 2007 for a 751.3 acre site. Construction was to include a main collector road, residential streets and 12 single family lots. The impervious cover was to be 4.44 acres (0.59 percent).

PROJECT DESCRIPTION

The proposed modification includes 287.75 acres with 382 residential lots. Impervious cover accounts for 52.52 acres (18.25 percent). The current modification includes Unit 1, Phases 1 and 2, Unit 2, Unit 3, Unit 4 and Unit 5. Only Unit 1, Phases 1 and 2 are within the Recharge Zone. Units 2 through 5 are within the Contributing Zone. Project wastewater will be disposed of by conveyance to the proposed Johnson Ranch Municipal Utility District Water Recycling Center.

PERMANENT POLLUTION ABATEMENT MEASURES

Since this low density development will not have more than 20 percent impervious cover, an exemption from permanent BMPs is approved.

GEOLOGY

According to the geologic assessment included with the application, the site is within the Glen Rose Formation, but is defined as Recharge Zone due to special conditions. The geologic assessment reports that nearly all of the Recharge Zone portion of the property is covered by alluvium and, as a result, no geologic features were observed. The San Antonio Regional Office site assessment conducted on October 2, 2012 revealed that the site was generally as described in the application.

SPECIAL CONDITIONS

- I. This modification is subject to all Special and Standard Conditions listed in the WPAP approval letter dated October 24, 2007.
- II. Please be aware that 30 TAC 213.8(4) prohibits the use of sewage holding tanks as part of an organized sewer collection system.

STANDARD CONDITIONS

1. Pursuant to Chapter 7 Subchapter C of the Texas Water Code, any violations of the requirements in 30 TAC Chapter 213 may result in administrative penalties.
2. The holder of the approved Edwards Aquifer protection plan must comply with all provisions of 30 TAC Chapter 213 and all best management practices and measures contained in the approved plan. Additional and separate approvals, permits, registrations and/or authorizations from other TCEQ Programs (i.e., Stormwater, Water Rights, UIC) can be required depending on the specifics of the plan.
3. In addition to the rules of the Commission, the applicant may also be required to comply with state and local ordinances and regulations providing for the protection of water quality.

Prior to Commencement of Construction:

4. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the San Antonio Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of the county in which the property is located. A description of the property boundaries shall

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be included in the deed recordation in the county deed records. A suggested form (Deed Recordation Affidavit, TCEQ-0625) that you may use to deed record the approved WPAP is enclosed.

5. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved WPAP and this notice of approval shall be maintained at the project location until all regulated activities are completed.
6. Modification to the activities described in the referenced WPAP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
7. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the San Antonio Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person. The executive director will use the notification to determine if the approved plan is eligible for an extension.
8. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved WPAP, must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.
9. All borings with depths greater than or equal to 20 feet must be plugged with non-shrink grout from the bottom of the hole to within three (3) feet of the surface. The remainder of the hole must be backfilled with cuttings from the boring. All borings less than 20 feet must be backfilled with cuttings from the boring. All borings must be backfilled or plugged within four (4) days of completion of the drilling operation. Voids may be filled with gravel.

During Construction:

10. During the course of regulated activities related to this project, the applicant or agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.
11. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 6, above.
12. If any sensitive feature (caves, solution cavities, sink holes, etc.) is discovered during construction, all regulated activities near the feature must be suspended immediately. The applicant or his agent must immediately notify the San Antonio Regional Office of the discovery of the feature. Regulated activities near the feature may not proceed until the

executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality. The plan must be sealed, signed, and dated by a Texas Licensed Professional Engineer.

13. One well exists within the Contributing Zone portion of the site. All water wells, including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.
14. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.
15. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.
16. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
17. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

After Completion of Construction:

18. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the San Antonio Regional Office within 30 days of site completion.
19. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. The regulated entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through San Antonio Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.
20. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.

Mr. Michael L. Schoenfeld

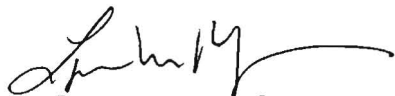
Page 5

October 10, 2012

21. An Edwards Aquifer protection plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Edwards Aquifer protection plan must be submitted to the San Antonio Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.
22. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Dianne Pavlicek, P.G., of the Edwards Aquifer Protection Program of the San Antonio Regional Office at 210-403-4074.

Sincerely,



Lynn Bumgardner, Water Section Manager
San Antonio Region Office
Texas Commission on Environmental Quality

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Enclosures: Deed Recordation Affidavit, Form TCEQ-0625
Change in Responsibility for Maintenance of Permanent BMPs, Form TCEQ-10263

cc: Ms. Jacy M. Warwick, P.E., Loomis Austin, Inc.
Mr. Thomas H. Hornseth, P.E., Comal County
The Honorable Bill Krawietz, City of Bulverde
Mr. Roland Ruiz, Edwards Aquifer Authority
TCEQ Central Records, Building F, MC 212



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September 28, 2012

Dianne Pavlicek, P.G.
TCEQ Edwards Aquifer Protection Program
San Antonio Region
14250 Judson Rd
San Antonio, TX 78233-4480

RE: Johnson Ranch WPAP Modification

Ms. Pavlicek,

This letter is submitted on behalf of the owner, DHJ Development, LLC, in support of the WPAP Modification for Johnson Ranch in response to comments issued September 24, 2012.

1. Please revise Project Description (Attachment C/General Information Form) to include reference to the actual modification including Unit 1 (Phases 1 and 2), Unit 2, Unit 3, Unit 4 and Unit 5 for clarification to reader. Revising the Attachment B (General Information Form) map to show the location of Units 1 through 5 would be most helpful to the reader.

Response: Attachments B and C of the General Information Form have been revised as requested and are attached.

2. The Geologic Assessment done by Kemble White, Ph.D, P.G., requires revision to clarify that the Recharge Zone at this site consists of alluvium covered Glen Rose Formation, not alluvium covered Edwards Group. The Cibolo Creek watercourse and associated alluvium was designated as Recharge Zone in the mid 1970's where it is flowing on the Glen Rose Formation, since the watercourse contributes significant recharge to the Edwards downstream (Leon Byrd, TCEQ, Austin, TX personal communication, September 21, 2012). Please revise all portions of the Geologic Assessment pertaining to the Recharge Zone segment of the property to reflect how the Recharge Zone is defined along the Cibolo Creek watercourse.

Response: An email has been sent to Mr. White, requesting this revision, and including the TCEQ reviewer.

3. Please comment on how future development will maintain the existing less than 20% impervious cover so that Permanent Best Management Practices will not be required.

Response: The portion of Johnson Ranch that drains toward the Recharge Zone (all areas included in this WPAP Modification) will be limited to 20% impervious cover as the BMP method. The remaining portions of the tract, all located within the Contributing Zone, will



not be limited to 20% impervious cover, and will have permanent BMPS, including water quality ponds) designed to treat all future development.

If you have any questions or require additional information, please call me at (512) 327-1180, extension 124, or send email to jwarwick@loomis-partners.com.

Thank you,

Jacy M. Warwick, P.E.

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Attachment C – Project Description

The Johnson Ranch is a 751.3 acre low density residential development located in Comal County, TX, within the City of Bulverde ETJ. The site has approximately 113 acres of Edwards Aquifer Recharge Zone located on the south portion, with an additional 212 acres of land draining towards the Recharge Zone. The remainder of the site is located in the Edwards Aquifer Contributing Zone.

Johnson Ranch originally obtained a Water Pollution Abatement Plan permit for the entire 751.3 acres in August 2007, with the permitted construction consisting of Phase 1A and the Johnson Ranch Elementary School (WPAP obtained by others). The construction of this subdivision will occur in phases, and each now each subsequent construction phase will be submitted either as a modification to the original Water Pollution Abatement Plan (consisting of any construction within the 325 acres in the Recharge Zone drainage area) or new a Contributing Zone Permit (and subsequent modifications) for all construction within the remaining 426.3 acres of Contributing Zone.

The current WPAP modification will include Units 1, Phases 1 and 2, Unit 2, Unit 3, Unit 4, and Unit 5. These sections are labeled on Attachment B, USGS 7.5 Minute Quad of the Edwards Aquifer Recharge Zone.

Potable water will be provided by Johnson Ranch Municipal Utility District, under an agreement with GBRA. Approximately 47,300 gallons per day (peak flow) of domestic wastewater is anticipated to be generated by the entire development after completion, and will be disposed of by conveyance to the proposed Johnson Ranch Municipal Utility District's Water Recycling Center.

The drainage system includes a storm sewer system in and along the residential streets, and a ditch system along both sides of the collector road.

As specified in TAC Chapter 213.5(b)(4)(D)(ii)(III) where a site is used for low density single-family development and has 20% impervious cover or less, other permanent BMPs are not required.

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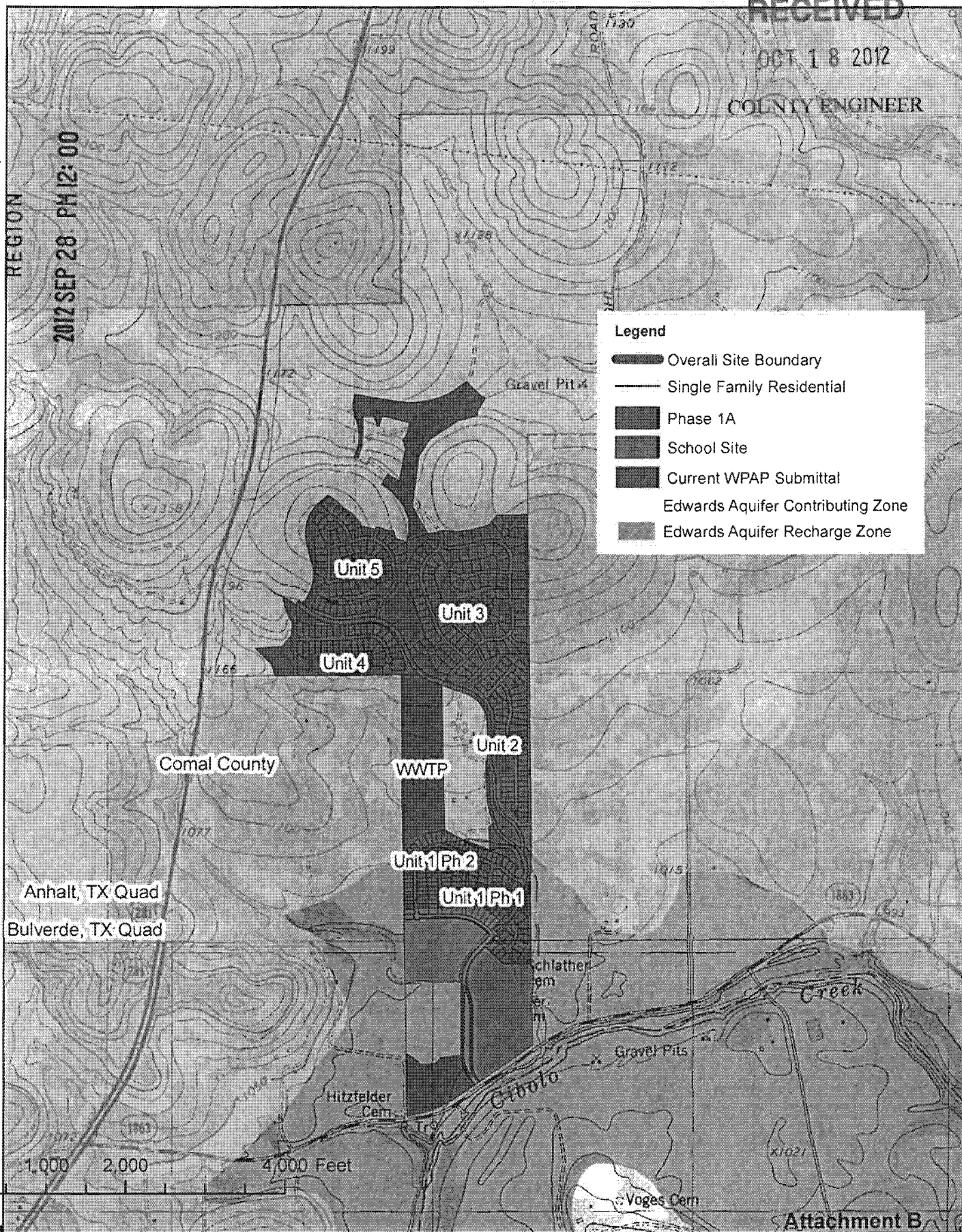
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Legend

-  Overall Site Boundary
-  Single Family Residential
-  Phase 1A
-  School Site
-  Current WPAP Submittal
-  Edwards Aquifer Contributing Zone
-  Edwards Aquifer Recharge Zone



LOOMIS PROJ. NO. 110005 IN PROJECT JOHNSON RANCH CADDOUS WPAP | JUNE 2012



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Attachment B

Johnson Ranch WPAP

Edwards Aquifer Recharge Zone Map

Response to item #2:

(From Kemble White, Ph.D., P.G., originally received via email on 9/28/2012)

Here's a point of clarification regarding Edwards aquifer recharge and the Johnson Ranch site. The site sits on a rather unique area within the TCEQ regulatory boundary of the recharge zone. Whereas almost all of the delineated recharge zone consists of contiguous mapped outcrops of Edwards and Georgetown limestones, the linear extension of the recharge zone boundary along Cibolo Creek is primarily underlain by the Glen Rose limestone which is typically associated with the Trinity Aquifer. There is a growing body of research suggesting communication between these aquifers, but Cibolo Creek provided some of the first compelling field evidence. Recharge to the Trinity aquifer in the area occurs primarily in the lower Cibolo Creek valley (upstream of Johnson Ranch) between Boerne and Camp Bullis where the karstic portion of the lower Glen Rose limestone is exposed in the creek bed. In that location, most of the non-flood stage base flow of Cibolo Creek is diverted underground through caves and sinkholes. (See: TWDB Report 273 Ground-Water Availability of the Lower Cretaceous Formations in the Hill Country of South-Central Texas, by John B. Ashworth, January 1983) This recharge area is the justification for Cibolo Creek being included in the Edwards Aquifer recharge zone despite the absence of Edwards strata. Hydrologic connectivity is assumed since the Trinity and the Edwards are juxtaposed with one another along faults in the down gradient (coastward) direction.

By contrast, Johnson Ranch is located in the upper portion of the Upper Glen Rose Limestone, which is less altered by karst processes and not generally known for rapid infiltration of surface water. Recent assessments of the vulnerability of ground water to contamination in Northern Bexar County determined that stratigraphically equivalent Upper Glen Rose outcrop across Cibolo Creek from the site was predominantly in the lowest of seven vulnerability categories used in the study. With respect to the Edwards aquifer the hydrologic significance of Johnson Ranch is that runoff leaving the site could reach the main portion of the recharge zone through Cibolo Creek several miles downstream.

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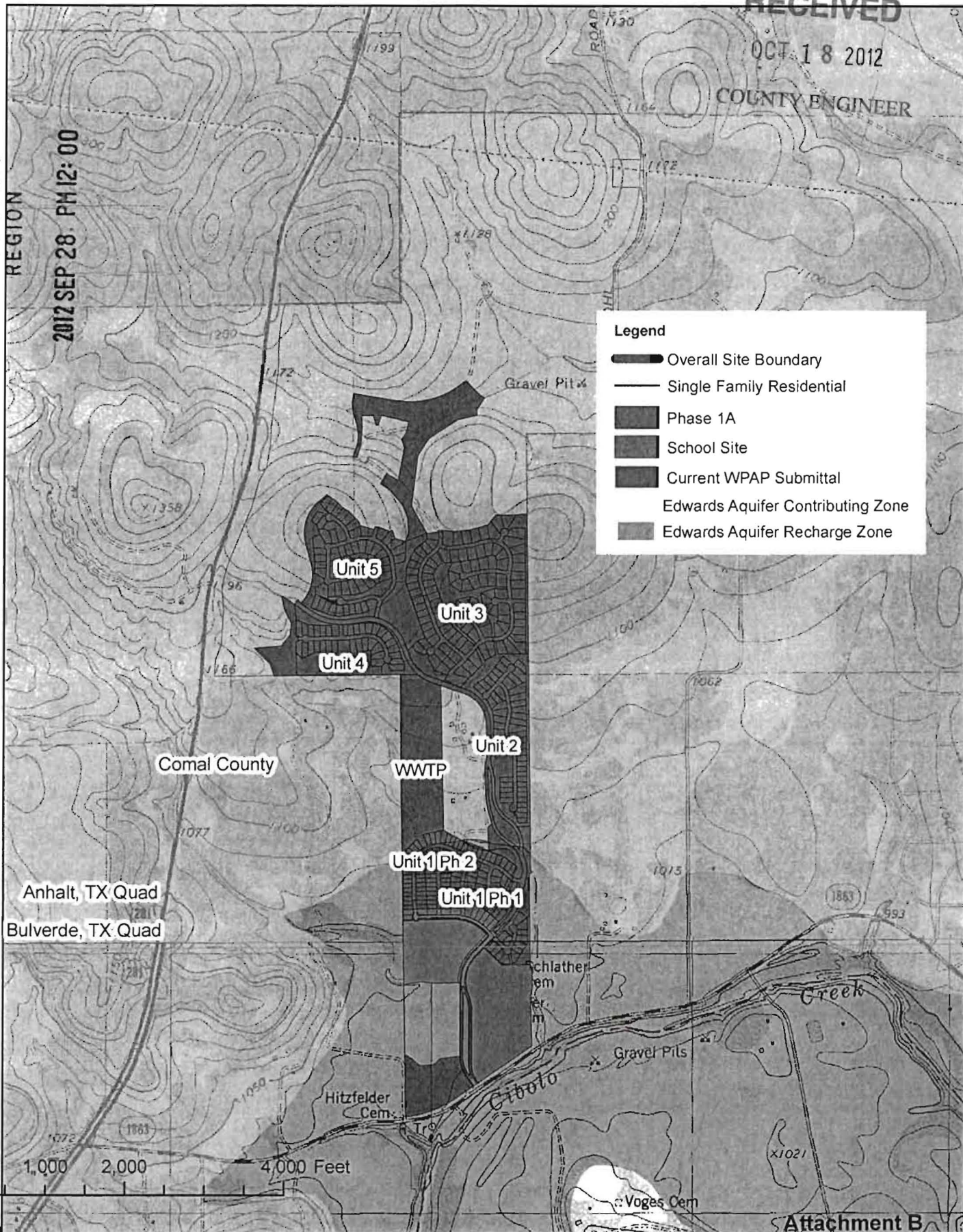
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0 1,000 2,000 4,000 Feet

Attachment B



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Johnson Ranch WPAP

Edwards Aquifer Recharge Zone Map

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OCT 18 2012

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5. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved WPAP and this notice of approval shall be maintained at the project location until all regulated activities are completed.
6. Modification to the activities described in the referenced WPAP application following the date of approval may require the submittal of a plan to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
7. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the San Antonio Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person. The executive director will use the notification to determine if the approved plan is eligible for an extension.
8. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved WPAP, must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. If a water quality pond is proposed, it shall be used as a sedimentation basin during construction. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.
9. All borings with depths greater than or equal to 20 feet must be plugged with non-shrink grout from the bottom of the hole to within three (3) feet of the surface. The remainder of the hole must be backfilled with cuttings from the boring. All borings less than 20 feet must be backfilled with cuttings from the boring. All borings must be backfilled or plugged within four (4) days of completion of the drilling operation. Voids may be filled with gravel.

During Construction:

10. During the course of regulated activities related to this project, the applicant or agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.
11. This approval does not authorize the installation of temporary aboveground storage tanks on this project. If the contractor desires to install a temporary aboveground storage tank for use during construction, an application to modify this approval must be submitted and approved prior to installation. The application must include information related to tank location and spill containment. Refer to Standard Condition No. 6, above.
12. If any sensitive feature (caves, solution cavities, sink holes, etc.) is discovered during construction, all regulated activities near the feature must be suspended immediately. The applicant or his agent must immediately notify the San Antonio Regional Office of the discovery of the feature. Regulated activities near the feature may not proceed until the

executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality. The plan must be sealed, signed, and dated by a Texas Licensed Professional Engineer.

13. One well exists within the Contributing Zone portion of the site. All water wells, including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.
14. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.
15. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge will be filtered through appropriately selected best management practices. These may include vegetated filter strips, sediment traps, rock berms, silt fence rings, etc.
16. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
17. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

After Completion of Construction:

18. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the San Antonio Regional Office within 30 days of site completion.
19. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. The regulated entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through San Antonio Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.
20. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.

Mr. Michael L. Schoenfeld

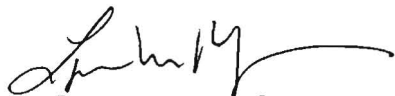
Page 5

October 10, 2012

21. An Edwards Aquifer protection plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Edwards Aquifer protection plan must be submitted to the San Antonio Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.
22. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Dianne Pavlicek, P.G., of the Edwards Aquifer Protection Program of the San Antonio Regional Office at 210-403-4074.

Sincerely,



Lynn Bumgardner, Water Section Manager
San Antonio Region Office
Texas Commission on Environmental Quality

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OCT 18 2012

COUNTY ENGINEER

LB/DP/eg

Enclosures: Deed Recordation Affidavit, Form TCEQ-0625
Change in Responsibility for Maintenance of Permanent BMPs, Form TCEQ-10263

cc: Ms. Jacy M. Warwick, P.E., Loomis Austin, Inc.
Mr. Thomas H. Hornseth, P.E., Comal County
The Honorable Bill Krawietz, City of Bulverde
Mr. Roland Ruiz, Edwards Aquifer Authority
TCEQ Central Records, Building F, MC 212



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PARTNERS

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REGION

emailed

September 28, 2012

Dianne Pavlicek, P.G.
TCEQ Edwards Aquifer Protection Program
San Antonio Region
14250 Judson Rd
San Antonio, TX 78233-4480

RE: Johnson Ranch WPAP Modification

Ms. Pavlicek,

This letter is submitted on behalf of the owner, DHJ Development, LLC, in support of the WPAP Modification for Johnson Ranch in response to comments issued September 24, 2012.

1. Please revise Project Description (Attachment C/General Information Form) to include reference to the actual modification including Unit 1 (Phases 1 and 2), Unit 2, Unit 3, Unit 4 and Unit 5 for clarification to reader. Revising the Attachment B (General Information Form) map to show the location of Units 1 through 5 would be most helpful to the reader.

Response: Attachments B and C of the General Information Form have been revised as requested and are attached.

2. The Geologic Assessment done by Kemble White, Ph.D, P.G., requires revision to clarify that the Recharge Zone at this site consists of alluvium covered Glen Rose Formation, not alluvium covered Edwards Group. The Cibolo Creek watercourse and associated alluvium was designated as Recharge Zone in the mid 1970's where it is flowing on the Glen Rose Formation, since the watercourse contributes significant recharge to the Edwards downstream (Leon Byrd, TCEQ, Austin, TX personal communication, September 21, 2012). Please revise all portions of the Geologic Assessment pertaining to the Recharge Zone segment of the property to reflect how the Recharge Zone is defined along the Cibolo Creek watercourse.

Response: An email has been sent to Mr. White, requesting this revision, and including the TCEQ reviewer.

3. Please comment on how future development will maintain the existing less than 20% impervious cover so that Permanent Best Management Practices will not be required.

Response: The portion of Johnson Ranch that drains toward the Recharge Zone (all areas included in this WPAP Modification) will be limited to 20% impervious cover as the BMP method. The remaining portions of the tract, all located within the Contributing Zone, will



not be limited to 20% impervious cover, and will have permanent BMPS, including water quality ponds) designed to treat all future development.

If you have any questions or require additional information, please call me at (512) 327-1180, extension 124, or send email to jwarwick@loomis-partners.com.

Thank you,

Jacy M. Warwick, P.E.

Loomis Partners

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Attachment C – Project Description

The Johnson Ranch is a 751.3 acre low density residential development located in Comal County, TX, within the City of Bulverde ETJ. The site has approximately 113 acres of Edwards Aquifer Recharge Zone located on the south portion, with an additional 212 acres of land draining towards the Recharge Zone. The remainder of the site is located in the Edwards Aquifer Contributing Zone.

Johnson Ranch originally obtained a Water Pollution Abatement Plan permit for the entire 751.3 acres in August 2007, with the permitted construction consisting of Phase 1A and the Johnson Ranch Elementary School (WPAP obtained by others). The construction of this subdivision will occur in phases, and each now each subsequent construction phase will be submitted either as a modification to the original Water Pollution Abatement Plan (consisting of any construction within the 325 acres in the Recharge Zone drainage area) or new a Contributing Zone Permit (and subsequent modifications) for all construction within the remaining 426.3 acres of Contributing Zone.

The current WPAP modification will include Units 1, Phases 1 and 2, Unit 2, Unit 3, Unit 4, and Unit 5. These sections are labeled on Attachment B, USGS 7.5 Minute Quad of the Edwards Aquifer Recharge Zone.

Potable water will be provided by Johnson Ranch Municipal Utility District, under an agreement with GBRA. Approximately 47,300 gallons per day (peak flow) of domestic wastewater is anticipated to be generated by the entire development after completion, and will be disposed of by conveyance to the proposed Johnson Ranch Municipal Utility District's Water Recycling Center.

The drainage system includes a storm sewer system in and along the residential streets, and a ditch system along both sides of the collector road.

As specified in TAC Chapter 213.5(b)(4)(D)(ii)(III) where a site is used for low density single-family development and has 20% impervious cover or less, other permanent BMPs are not required.

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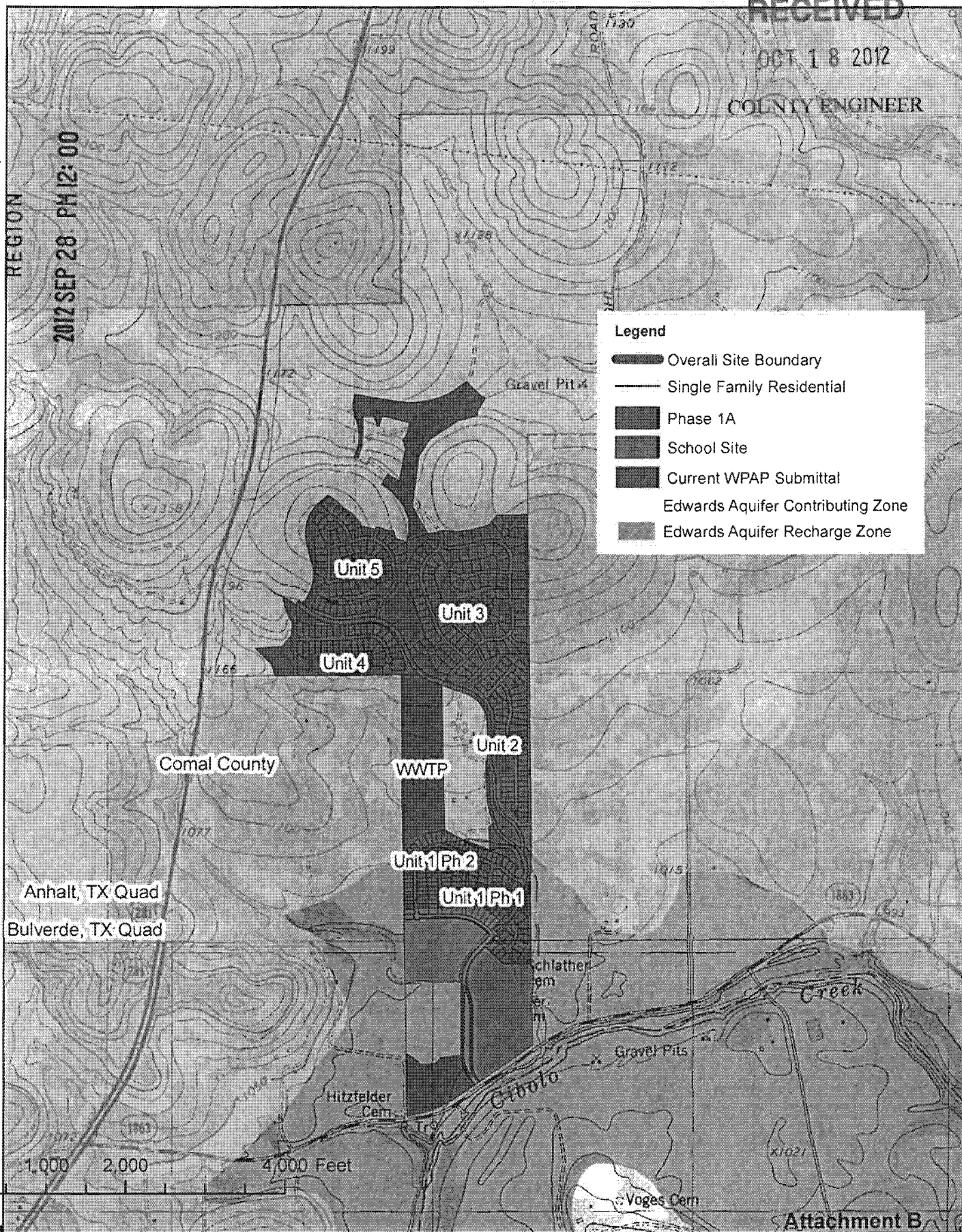
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COUNTY ENGINEER

Legend

- Overall Site Boundary
- Single Family Residential
- Phase 1A
- School Site
- Current WPAP Submittal
- Edwards Aquifer Contributing Zone
- Edwards Aquifer Recharge Zone



LOOMIS PROJ. NO. 110005 | IN PROJECT JOHNSON RANCH CADDOUS WPAP | JUNE 2012

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Attachment B

Johnson Ranch WPAP

Edwards Aquifer Recharge Zone Map

Response to item #2:

(From Kemble White, Ph.D., P.G., originally received via email on 9/28/2012)

Here's a point of clarification regarding Edwards aquifer recharge and the Johnson Ranch site. The site sits on a rather unique area within the TCEQ regulatory boundary of the recharge zone. Whereas almost all of the delineated recharge zone consists of contiguous mapped outcrops of Edwards and Georgetown limestones, the linear extension of the recharge zone boundary along Cibolo Creek is primarily underlain by the Glen Rose limestone which is typically associated with the Trinity Aquifer. There is a growing body of research suggesting communication between these aquifers, but Cibolo Creek provided some of the first compelling field evidence. Recharge to the Trinity aquifer in the area occurs primarily in the lower Cibolo Creek valley (upstream of Johnson Ranch) between Boerne and Camp Bullis where the karstic portion of the lower Glen Rose limestone is exposed in the creek bed. In that location, most of the non-flood stage base flow of Cibolo Creek is diverted underground through caves and sinkholes. (See: TWDB Report 273 Ground-Water Availability of the Lower Cretaceous Formations in the Hill Country of South-Central Texas, by John B. Ashworth, January 1983) This recharge area is the justification for Cibolo Creek being included in the Edwards Aquifer recharge zone despite the absence of Edwards strata. Hydrologic connectivity is assumed since the Trinity and the Edwards are juxtaposed with one another along faults in the down gradient (coastward) direction.

By contrast, Johnson Ranch is located in the upper portion of the Upper Glen Rose Limestone, which is less altered by karst processes and not generally known for rapid infiltration of surface water. Recent assessments of the vulnerability of ground water to contamination in Northern Bexar County determined that stratigraphically equivalent Upper Glen Rose outcrop across Cibolo Creek from the site was predominantly in the lowest of seven vulnerability categories used in the study. With respect to the Edwards aquifer the hydrologic significance of Johnson Ranch is that runoff leaving the site could reach the main portion of the recharge zone through Cibolo Creek several miles downstream.

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emailed

September 28, 2012

Dianne Pavlicek, P.G.
TCEQ Edwards Aquifer Protection Program
San Antonio Region
14250 Judson Rd
San Antonio, TX 78233-4480

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Thank you,

Jacy M. Warwick, P.E.

Loomis Partners

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COUNTY ENGINEER

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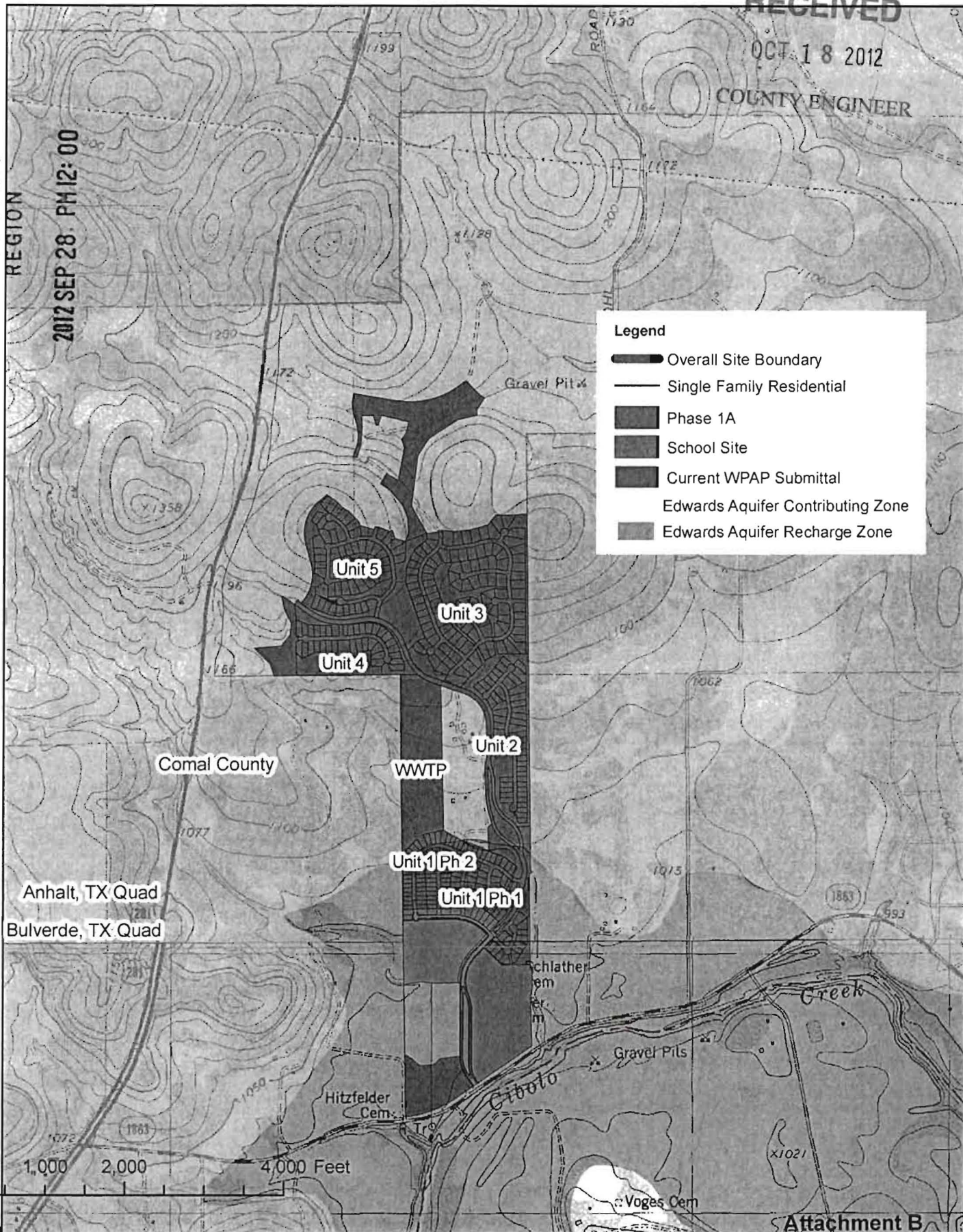
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COUNTY ENGINEER

Legend

-  Overall Site Boundary
-  Single Family Residential
-  Phase 1A
-  School Site
-  Current WPAP Submittal
-  Edwards Aquifer Contributing Zone
-  Edwards Aquifer Recharge Zone



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Attachment B



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Johnson Ranch WPAP

Edwards Aquifer Recharge Zone Map

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COUNTY ENGINEER

Response to item #2:

(From Kemble White, Ph.D., P.G., originally received via email on 9/28/2012)

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Buddy Garcia, *Chairman*
Larry R. Soward, *Commissioner*
Glenn Shankle, *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
Protecting Texas by Reducing and Preventing Pollution

October 24, 2007

Mr. Michael Schoenfeld
DH/JB Partnership, Ltd.
13000 US Hwy 290 W.
Austin, Texas 78737

Re: Edwards Aquifer, Comal County
NAME OF PROJECT: Johnson Ranch; Located along the northeast corner of US Hwy 281 and FM 1863; Bulverde ETJ, Texas
TYPE OF PLAN: Request for Approval of a Water Pollution Abatement Plan (WPAP); 30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer
Edwards Aquifer Protection Program ID No. 2702.00; Investigation No. 593654; Regulated Entity No. RN105332522

Dear Mr. Schoenfeld:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the WPAP application for the above-referenced project submitted to the San Antonio Regional Office by Loomis Austin, Inc. on behalf of DH/JB Partnership, Ltd. on August 30, 2007. Final review of the WPAP was completed after additional material was received on October 11, 2007. As presented to the TCEQ, the Temporary Best Management Practices (BMPs) and construction plans were prepared by a Texas Licensed Professional Engineer to be in general compliance with the requirements of 30 TAC Chapter 213. These planning materials were sealed, signed and dated by a Texas Licensed Professional Engineer. Therefore, based on the engineer's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer Protection Plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

PROJECT DESCRIPTION

The proposed single family residential project will have an area of approximately 751.3 acres. It will include the construction of a main collector road (2,130 L.F.), residential streets (1,219 L.F.) and 12 single family house lots. The impervious cover will be 4.44 acres (0.59%). Project wastewater will be disposed of by conveyance to the proposed Comal County WCID #1 Water Recycling Center owned by Comal County.

REPLY TO: REGION 13 • 14250 JUDSON RD. • SAN ANTONIO, TEXAS 78233-4480 • 210-490-3096 • FAX 210-545-4329

P.O. Box 13087 • Austin, Texas 78711-3087 • 512-239-1000 • Internet address: www.tceq.state.tx.us

printed on recycled paper using soy-based ink

Mr. Michael Schoenfeld

October 24, 2007

Page 2

PERMANENT POLLUTION ABATEMENT MEASURES

Since this single-family residential project will not have more than 20 percent impervious cover, an exemption from permanent BMPs is approved.

GEOLOGY

According to the geologic assessment included with the application, one sensitive man-made feature in bedrock (water well) was observed at the project site. As presented by the project engineer, the well is in use and complies with 16 TAC Chapter 76. The San Antonio Regional Office did not conduct a site assessment.

SPECIAL CONDITIONS

- I. The holder of the approved Edwards Aquifer WPAP must comply with all provisions of 30 TAC Chapter 213 and all best management practices and measures contained in the application.
- II. In addition to the rules of the Commission, the applicant may also be required to comply with state and local ordinances and regulations providing for the protection of water quality.
- III. Since this project will not have more than 20% impervious cover, an exemption from permanent BMPs is approved. If the percent impervious cover ever increases above 20% or the land use changes, the exemption for the whole site as described in the property boundaries required by §213.4(g), may no longer apply and the property owner must notify the appropriate regional office of these changes.
- IV. As stated by the project engineer, the site boundary is based upon the final development and the total site acreage will be 751.3 acres. If the site boundary and site acreage ever changes (increases or decreases), the TCEQ shall be notified. The percent impervious cover is based upon the total site acreage and can change if the site boundary is changed.
- V. The maximum amount of impervious cover for the site is 4.44 acres. A modification to an approved WPAP must be submitted and approved by the TCEQ prior to exceeding that amount.
- VI. For any future modifications, an up to date site plan and acreage accounting table shall accompany every submittal. The site plan should detail the legal boundaries of the property (i.e. 751.3 acres) and the individual phase layouts. The acreage accounting table shall accurately provide the total acreage and total impervious cover for the site and for each phase.
- VII. Wastewater will be sent to the proposed Comal County WCID #1. No wastewater is to be generated until this treatment plant is constructed and operational.

STANDARD CONDITIONS

1. Pursuant to Chapter 7 Subchapter C of the Texas Water Code, any violations of the requirements in 30 TAC Chapter 213 may result in administrative penalties.

Mr. Michael Schoenfeld
October 24, 2007
Page 3

Prior to Commencement of Construction:

2. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the San Antonio Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of the county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested form (Deed Recordation Affidavit, TCEQ-0625) that you may use to deed record the approved WPAP is enclosed.
3. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved WPAP and this notice of approval shall be maintained at the project location until all regulated activities are completed.
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7. All borings with depths greater than or equal to 20 feet must be plugged with non-shrink grout from the bottom of the hole to within three (3) feet of the surface. The remainder of the hole must be backfilled with cuttings from the boring. All borings less than 20 feet must be backfilled with cuttings from the boring. All borings must be backfilled or plugged within four (4) days of completion of the drilling operation. Voids may be filled with gravel.

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Mr. Michael Schoenfeld

October 24, 2007

Page 4

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11. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.
12. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
13. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

After Completion of Construction:

14. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the San Antonio Regional Office within 30 days of site completion.
15. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. The regulated entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred. A copy of the transfer of responsibility must be filed with the executive director through San Antonio Regional Office within 30 days of the transfer. A copy of the transfer form (TCEQ-10263) is enclosed.
16. Upon legal transfer of this property, the new owner(s) is required to comply with all terms of the approved Edwards Aquifer protection plan. If the new owner intends to commence any new regulated activity on the site, a new Edwards Aquifer protection plan that specifically addresses

Mr. Michael Schoenfeld

October 24, 2007

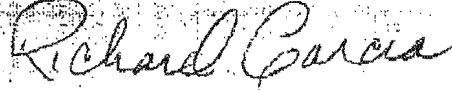
Page 5

the new activity must be submitted to the executive director. Approval of the plan for the new regulated activity by the executive director is required prior to commencement of the new regulated activity.

17. An Edwards Aquifer protection plan approval or extension will expire and no extension will be granted if more than 50 percent of the total construction has not been completed within ten years from the initial approval of a plan. A new Edwards Aquifer protection plan must be submitted to the San Antonio Regional Office with the appropriate fees for review and approval by the executive director prior to commencing any additional regulated activities.
18. At project locations where construction is initiated and abandoned, or not completed, the site shall be returned to a condition such that the aquifer is protected from potential contamination.

If you have any questions or require additional information, please contact Charly Fritz of the Edwards Aquifer Protection Program of the San Antonio Regional Office at (210) 403-4065.

Sincerely,



Glenn Shankle
Executive Director
Texas Commission on Environmental Quality

GS/CEF/eg

Enclosures: Deed Recordation Affidavit, Form TCEQ-0625
Change in Responsibility for Maintenance of Permanent BMPs, Form TCEQ-10263

cc: Mr. Charles Kaough, P.E., Loomis Austin, Inc.
Mr. Tom Hornseth, Comal County
Ms. Velma Danielson, Edwards Aquifer Authority
WASTEWATER PERMITS GUYS IN AUSTIN
TCEQ Central Records, Building F, MC 212

Kathleen Hartnett White, *Chairman*
Larry R. Soward, *Commissioner*
H. S. Buddy Garcia, *Commissioner*
Glenn Shankle, *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

August 31, 2007

RECEIVED

SEP 05 2007

COUNTY ENGINEER

Mr. Thomas H. Hornseth, P.E.
Comal County Engineer
195 David Jonas Drive
New Braunfels TX 78132-3710

Re: Edwards Aquifer, Comal County
PROJECT NAME: PROJECT NAME: Johnson Ranch Subdivision, Located on the north-east corner of US Highway 281 and FM 1863
PLAN TYPE: PLAN TYPE: Application for Approval of a Water Pollution Abatement Plan (WPAP), 30 Texas Administration Code (TAC) Chapter 213; Edwards Aquifer Protection Program
San Antonio Region File Number: 2702.00

Dear Mr. Hornseth:

The enclosed WPAP application is being forwarded to you pursuant to the Edwards Aquifer Rules. The Texas Commission on Environmental Quality (TCEQ) is required by 30 TAC Chapter 213 to provide copies of all applications to affected incorporated cities and underground water conservation districts for their comments prior to TCEQ approval.

Please forward your comments to this office by September 30, 2007.

The Texas Commission on Environmental Quality appreciates your assistance in this matter and your compliance efforts to ensure protection of the State's environment. If you or members of your staff have any questions regarding these matters, please feel free to contact the San Antonio Region Office at (210) 490-3096.

Sincerely

A handwritten signature in black ink, appearing to read "Lynn M. Bumguardner".

Lynn M. Bumguardner
Water Section Work Leader
San Antonio Regional Office

LMB/eg

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ENVIRONMENTAL CONSULTING

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DEC 04 2007

COUNTY ENGINEER

2007 OCT 11 AM 11:20

"RECEIVED TCEQ"
SAN ANTONIO
REGION

October 10, 2007

Lynn Bumguardner
Water Section Work Leader
TCEQ San Antonio Regional Office
14250 Judson Road
San Antonio, Texas 78233

RE: Johnson Ranch; Located on the north side of FM 1863, half a mile east of U.S. 281; Bulverde
ETJ, Texas
Investigation Number 593654

We have modified the above referenced WPAP to address your comments presented in the review report dated September 27, 2007:

TCEQ-0584

1. **Item 2.** Per 30 TAC 213, the definition of "site" is the legal boundaries of the property. From information provided by Comal County Appraisal District, it appeared the 751.3 acres area, detailed in the plan sheets, was actually the combination of many smaller legally platted sites. Verify the legal boundaries of the site containing the 4.44 acres of impervious cover. Provide new and relevant platting information as necessary.

RE: 30 TAC 213 defines "site" as *The entire area included within the legal boundaries of the property described in the application.* The property included with our application contains 751.3 acres and constitutes the "site" as defined above. Currently, none of property within the 751.3-acre area described in the application is platted. The City of Bulverde has approved a Master Plan for the development of the 751.3-acre site and the property will be platted and developed in phases over the coming years in compliance with the approved Master Plan and TCEQ WPAP requirements. The improvements depicted in the WPAP application reflect the first phase of the development along with the proposed legal subdivision of this phase. Based on recent discussions with our legal counsel, we understand that the implementation of 30 TAC 213 does not prohibit making provisions for master-planned communities where the ultimate build-out is phased, as is the case with the Johnson Ranch development. As a result, we have chosen to submit a WPAP application that includes the entire area for the development as the "site" although improvements for only the first phase of construction are ready at this time. As future phases of the project move beyond concept and into construction, we will submit modifications to the WPAP application as addressed in 30 TAC 213.4(j)(3) which contemplates modifications to original WPAP's based on the development of land previously identified in this application as undeveloped in the original water pollution abatement plan.

DEC 04 2007

COUNTY ENGINEER

2. **Item 4.** The total impervious cover in square feet and the percent impervious cover provided in the Impervious Cover of Proposed Project Table do not appear to be correct. Verify the data and revise as necessary.

RE: The total impervious cover and percent impervious cover has been verified and revised in Form TCEQ-0584 and on Sheet 1.

3. **Item 19.** As stated, the development is shown with existing and finished contours. On Sheet No. 5, it appears the finished contours for the roadway do not continue (or are difficult to see) past the 90 degree left (west) turn in the road. Provide a revised plan sheet with finished contours for the entire roadway.

RE: The contours have been darkened so that they are more visible.

4. **Item 21.** One sensitive manmade feature was discovered during the geologic assessment. Correct and provide a revised copy of Item 21 to state the sensitive manmade feature was shown on the site plan.

RE: Form TCEQ-0584 has been revised.

5. **Item 23 and 25.** Revise the site plan to indicate the areas of soil disturbance, the areas that will not be disturbed and the areas where soil stabilization will occur.

RE: The locations of Undisturbed Area and Disturbed Area are identified on the Index Map provided on Sheet 1. Their calculated areas are tabulated and located in the lower, center portion of Sheet 1. Note #10 on Sheet 6 indicates that "All disturbed area to be stabilized by vegetation or structure."

TCEQ-0600

6. Explain how the proposed development with lot sizes of one acre and less and a storm sewer system can be considered low density.

RE: 30 TAC 213 does not make reference to a minimum lot size requirement for a "low density" development nor does it give reference to the presence of a storm sewer system as being incompatible with a "low density" development. The proposed development is clearly intended to meet the requirements of low density development as intended by 30 TAC 213. The density of single-family lots proposed with our WPAP application is 62.6 acres per lot (12 lots on 751.3 acres) with an impervious cover ratio of 0.59%. Assuming continued compliance with the City of Bulverde's approved Master Plan, at full build-out, we anticipate the impervious cover within the project area will be less than 20%. Additionally, we would cluster the residential lots plus retain a minimum of at least 150 acres of open space to provide better re-charge features, storm water run-off filtration, and contiguous wild life habitat. Storm sewers are provided in association with the curb/gutter street section serving the residential lots included with this application. The curb/gutter street section is mandated for the residential lots by the City of Bulverde's Subdivision Ordinance

(the project is located within the City's ETJ). The street linking the residential lots to FM 1863 will not have a storm sewer system as stormwater will be allowed to sheet flow across it.

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COUNTY ENGINEER

Plan and Detail Sheets

7. Verify the limits of construction. Channel B and C appear to be situated outside the limits of construction on Sheet No. 5 (based upon the cross section arrows on Sheet No. 4). Clarify the location of these channels and revise the limits of construction as necessary.

RE: The Cross Section Lines had not been placed accurately and have been moved to reflect the location of the channel cross section.

8. Sheet No. 4, Channel A, B and C. The "Drainage Channel Data" and cross section details provided for each channel do not display the same information. For example, the data for Channel B states side slopes of 10:1 when the cross section stated 4:1. Provide revised cross sections and drainage channel data for each channel.

RE: The typographic errors in the cross sections and tables have been corrected.

9. Sheet No. 4 and No. 5, Channel A. The cross section and drainage channel data (Sheet No. 4) states the bottom of the channel will be 44 feet wide. On Sheet No. 5, a note stated there will be 16 linear feet of rock berm at the end of channel A and the lowest contour elevation line is only approximately 10 feet wide. Verify which information is correct.

- a. If the channel is to be 44 feet wide with only a 16 linear foot rock berm, provide evidence on how stormwater will not be allowed to bypass the rock berm.

RE: The bottom width is 4 feet. The typographic errors have been corrected. The rock berm length is correct for the depth of flow and the dimensions of the channel.

10. Sheet No. 1, Provide the edition year and page number of the City of Austin Environmental Criteria Manual used to determine the impervious cover per lot (Impervious Cover Data Table).

RE: This information has been added to the table.

Please let me know if you have any questions or comments regarding the updated plat submittal.

Sincerely,



Charles W. Kaough, P.E.

Comal Co

Water Pollution Abatement Plan

Johnson Ranch

Prepared for:

DH/JB Partnership, Ltd.

13000 US Highway 290 West

Austin, Texas 78737

Prepared by:

**LOOMIS
AUSTIN**

ENGINEERING, LAND SURVEYING &
ENVIRONMENTAL CONSULTING

3103 Bee Cave Road, Suite 225

Austin, TX 78746

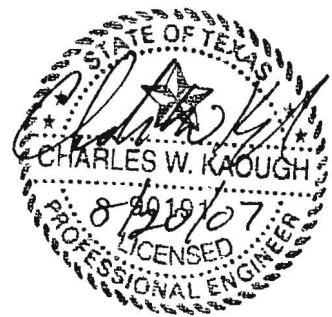
512/327-1180

FAX: 512/327-4062

LAI Proj. No. 070713

AUGUST 2007

7032743
AUG 29 2007
SARINCHU



General Information Form
For Regulated Activities on the
Edwards Aquifer Recharge and Transition Zones
and Relating to 30 TAC §213.4(b) & §213.5(b)(2)(A), (B)
Effective June 1, 1999

REGULATED ENTITY NAME: Johnson Ranch
COUNTY: Comal STREAM BASIN: Cibolo Creek

EDWARDS AQUIFER: ☒ RECHARGE ZONE
☐ TRANSITION ZONE

PLAN TYPE: ☒ WPAP ☐ AST ☐ EXCEPTION
☐ SCS ☐ UST ☐ MODIFICATION

CUSTOMER INFORMATION

1. Customer (Applicant):

Contact Person: Michael L. Schoenfeld
Entity: DH/JB Partnership, Ltd.
Mailing Address: 13000 US Hwy 290 W
City, State: Austin, Texas Zip: 78737
Telephone: (512) 394-0635 FAX: N/A

Agent/Representative (If any):

Contact Person: Charles W. Kaough, P.E.
Entity: Loomis Austin, Inc.
Mailing Address: 3103 Bee Cave Road, Suite 225
City, State: Austin, Texas Zip: 78746
Telephone: (521) 327-1180 FAX: (512) 327-4062

2. ☐ This project is inside the city limits of _____
☒ This project is outside the city limits but inside the ETJ (extra-territorial jurisdiction) of
Bulverde, Texas
☐ This project is not located within any city's limits or ETJ.

3. The location of the project site is described below. The description provides sufficient detail and clarity so that the TCEQ's Regional staff can easily locate the project and site boundaries for a field investigation.

The project is situated in the northeast corner of the intersection of U.S. 281 and FM 1863, in the southern Comal County. From TCEQ San Antonio Regional office, go north on Judson Road for 2.5 miles, take TX-1604-Loop west for 4.4 miles, take US 281 north for 9.6 miles, then take FM 1863 east for 0.5 miles. The site is located on the left side.

4. √ **ATTACHMENT A - ROAD MAP.** A road map showing directions to and the location of the project site is attached at the end of this form.

5. √ **ATTACHMENT B - USGS / EDWARDS RECHARGE ZONE MAP.** A copy of the official 7 ½ minute USGS Quadrangle Map (Scale: 1" = 2000') of the Edwards Recharge Zone is attached behind this sheet. The map(s) should clearly show:

- √ Project site.
- √ USGS Quadrangle Name(s).
- √ Boundaries of the Recharge Zone (and Transition Zone, if applicable).
- √ Drainage path from the project to the boundary of the Recharge Zone.

6. √ Sufficient survey staking is provided on the project to allow TCEQ regional staff to locate the boundaries and alignment of the regulated activities and the geologic or manmade features noted in the Geologic Assessment. **The TCEQ must be able to inspect the project site or the application will be returned.**

7. √ **ATTACHMENT C - PROJECT DESCRIPTION.** ~~Attached at the end of this form~~ The following is a detailed narrative description of the proposed project.

The Johnson Ranch is a 751.3 acre low density residential project located in Comal County, Texas, within the Bulverde ETJ. The construction of this development will occur in phases and each subsequent construction phase will be submitted as a modification to this WPAP. This initial submittal addresses the construction activities of Phase 1A. A Comal Independent School District elementary school is adjacent to Phase 1A but is not included in the Johnson Ranch site (a separate WPAP application for this site is to be submitted).

The Johnson Ranch has been in agricultural use for a number of years and has associated structures and pavement. Predevelopment impervious cover includes: 31,850 sf of buildings, 348,516 sf of ranch roads, and 11,591 sf of other paved surfaces. Total predevelopment impervious cover totals 9.0 acres.

Construction activities during Phase 1A will disturb 13.1 acres. This construction phase will produce a 2,130 LF collector road connecting the residential lots to RM 1863, 1,219 LF residential streets and 12 single-family residential lots. This activity will create 4.4 acres of impervious cover and remove 0.5 acres of predevelopment impervious cover. The total impervious cover for the 751.3 acre project will be increased by about 3.9 acres or approximately 0.53% of the project site.

Potable water will be supplied by Comal County WCID #1. The typical population of the development is estimated to be 36 persons per day. Approximately 3,300 gallons per day (peak flow) of domestic wastewater is anticipated to be generated by the entire development after completion.

The drainage system includes a 1,985 LF storm sewer system in and along the residential streets and a temporary area inlet to divert offsite flows through Phase 1A and roadside ditches and culverts on the collector road to convey offsite runoff and runoff from the right of way across the roadway.

As specified in TAC Chapter 213.5 (b) (4) (D) (ii) (III) where a site is used for low

density single-family residential development and has 20% or less impervious cover, other permanent BMPs measures are not required.

It is anticipated that there will be no storage of regulated quantities of hazardous materials within the proposed buildings.

8. Existing project site conditions are noted below:
- ☐ Existing commercial site
 - ☐ Existing industrial site
 - ☒ Existing residential site
 - ☒ Existing paved and/or unpaved roads
 - ☒ Undeveloped (Cleared)
 - ☒ Undeveloped (Undisturbed/Uncleared)
 - ☐ Other:

PROHIBITED ACTIVITIES

9. ☒ I am aware that the following activities are prohibited on the **Recharge Zone** and are not proposed for this project:
- (1) waste disposal wells regulated under 30 TAC Chapter 331 of this title (relating to Underground Injection Control);
 - (2) new feedlot/concentrated animal feeding operations, as defined in 30 TAC §213.3;
 - (3) land disposal of Class I wastes, as defined in 30 TAC §335.1;
 - (4) the use of sewage holding tanks as parts of organized collection systems; and
 - (5) new municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41(b), (c), and (d) of this title (relating to Types of Municipal Solid Waste Facilities).
10. ☒ I am aware that the following activities are prohibited on the **Transition Zone** and are not proposed for this project:
- (1) waste disposal wells regulated under 30 TAC Chapter 331 (relating to Underground Injection Control);
 - (2) land disposal of Class I wastes, as defined in 30 TAC §335.1; and
 - (3) new municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41 (b), (c), and (d) of this title.

ADMINISTRATIVE INFORMATION

11. The fee for the plan(s) is based on:
- ☒ For a Water Pollution Abatement Plan and Modifications, the total acreage of the site where regulated activities will occur.
 - ☐ For an Organized Sewage Collection System Plans and Modifications, the total linear footage of all collection system lines.
 - ☐ For a UST Facility Plan or an AST Facility Plan, the total number of tanks or piping systems.
 - ☐ A Contributing Zone Plan.
 - ☐ A request for an exception to any substantive portion of the regulations related to the protection of water quality.
 - ☐ A request for an extension to a previously approved plan.

12. Application fees are due and payable at the time the application is filed. If the correct fee is not submitted, the TCEQ is not required to consider the application until the correct fee is submitted. Both the fee and the Edwards Aquifer Fee Form have been sent to the Commission's:

☐ TCEQ cashier
☐ Austin Regional Office (for projects in Hays, Travis, and Williamson Counties)
☒ San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)

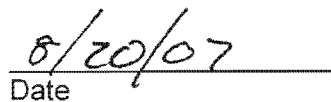
13. ☒ Submit one (1) original and three (3) copies of the completed application to the appropriate regional office for distribution by the TCEQ to the local municipality or county, groundwater conservation districts, and the TCEQ's Central Office.
14. ☒ No person shall commence any regulated activity until the Edwards Aquifer Protection Plan(s) for the activity has been filed with and approved by the executive director.
☐ No person shall commence any regulated activity until the Contributing Zone Plan for the activity has been filed with the executive director.

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **GENERAL INFORMATION FORM** is hereby submitted for TCEQ review. The application was prepared by:

Print Name of Customer/Agent



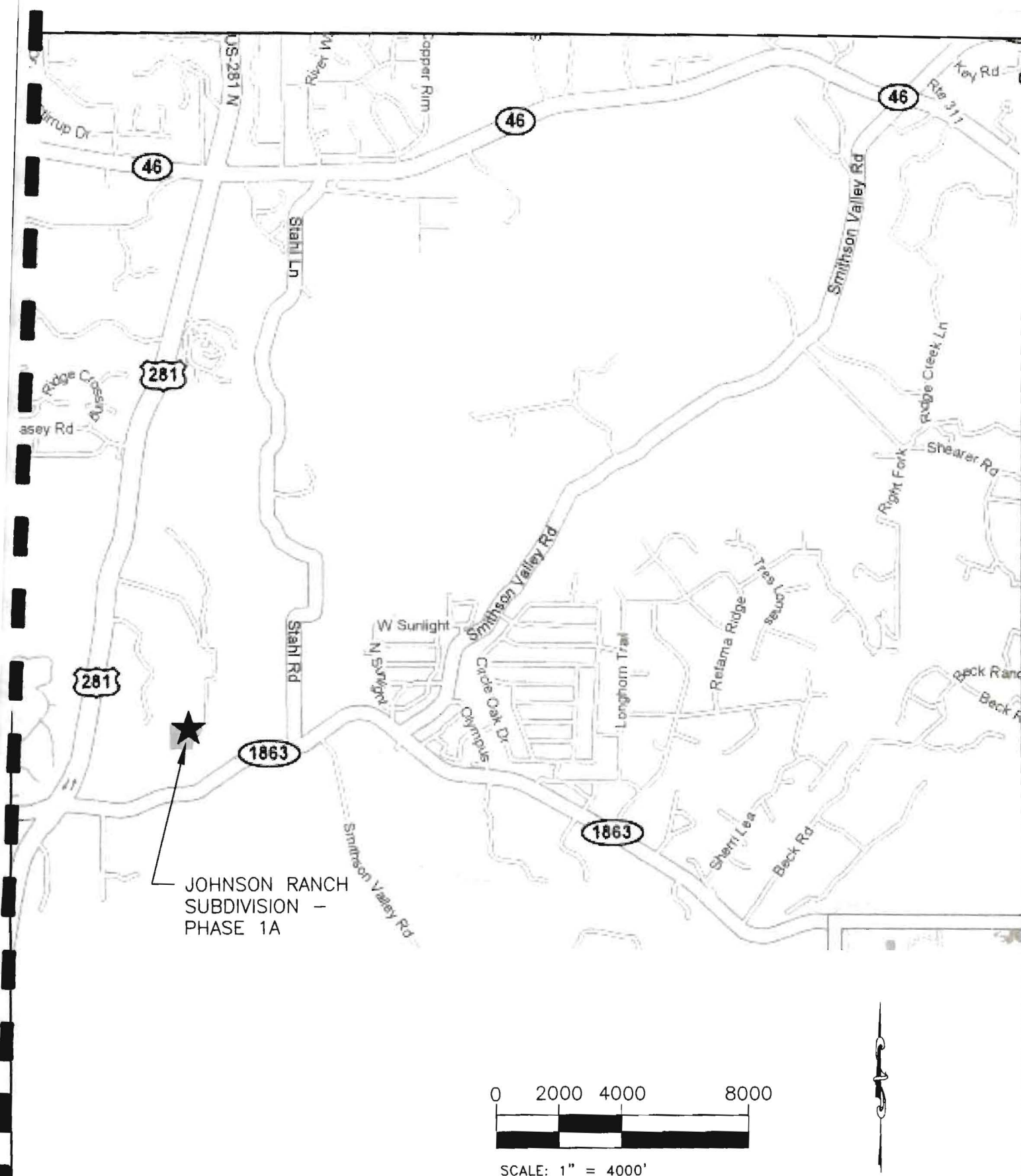
Signature of Customer/Agent



Date

If you have questions on how to fill out this form or about the Edwards Aquifer protection program, please contact us at 210/490-3096 for projects located in the San Antonio Region or 512/339-2929 for projects located in the Austin Region.

Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512/239-3282.



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3103 Bee Cave Road • Suite 225 • Austin Texas 78746
Phone: (512) 327-1180 • Fax: (512) 327-4062 • www.loomis-austin.com

**ATTACHMENT A
ROAD MAP**

JOHNSON RANCH PHASE 1A

Official 7 1/2 Minute USGS Quadrangle Map of the Edwards Recharge Zone

Johnson Ranch

COMAL COUNTY

BEXAR COUNTY

Phase 1 A Site

School Site

Anhalt, Tex Quad

Bulverde, Tex Quad

Legend

- Property Boundary
- Texas Counties
- USGS Quadrangle

Edwards Aquifer Zones

- Edwards Aquifer Contributing Zone
- Edwards Aquifer Recharge Zone

LOOMIS AUSTIN Attachment B Sheet 1 of 6

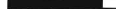
Johnson Ranch Phase 1A

Edwards Aquifer Recharge Zone

USGS Topographic Map

0 1,000 2,000 Feet

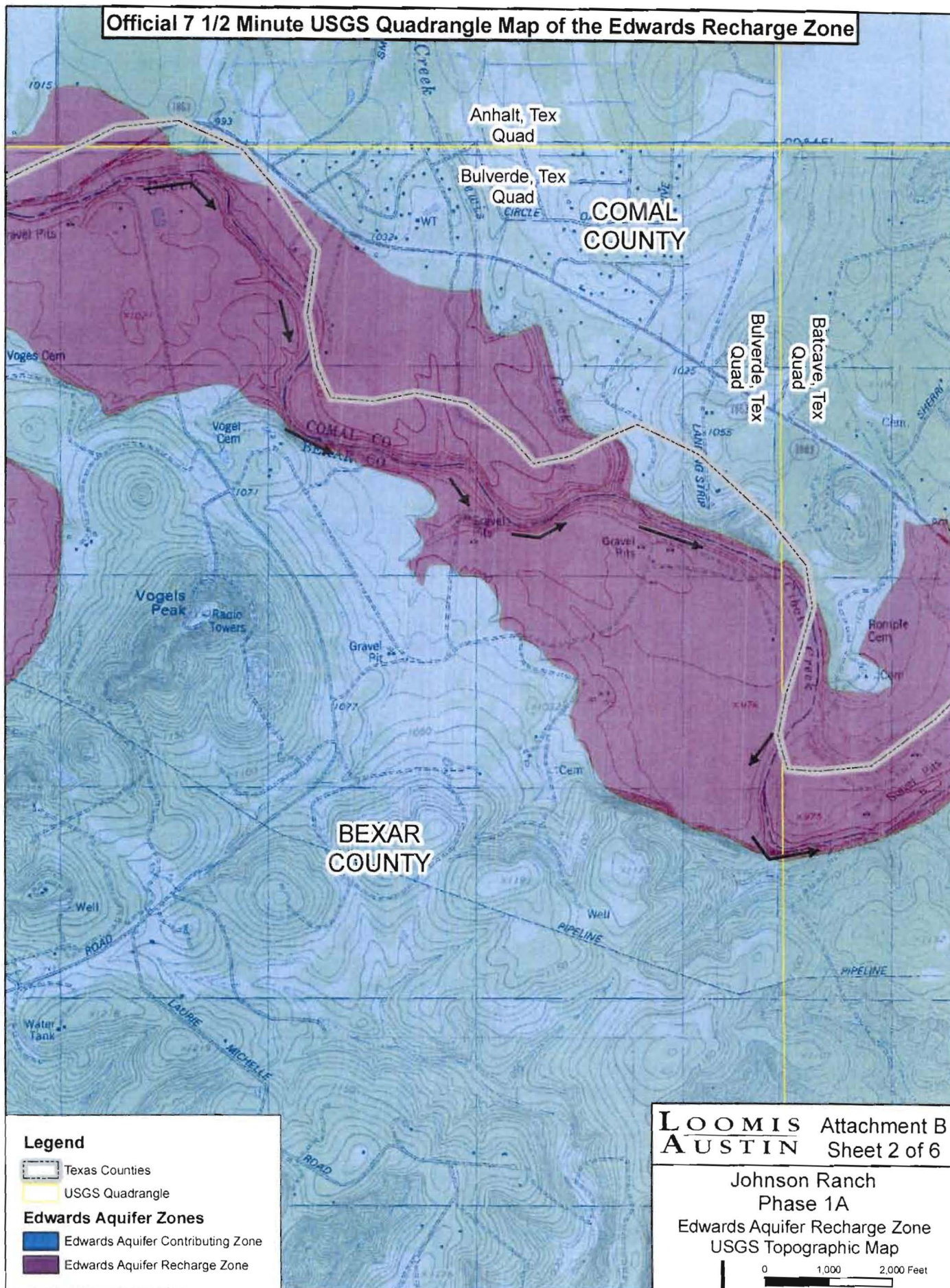
Johnson Ranch
Phase 1A
Edwards Aquifer Recharge Zone
USGS Topographic Map



0 1,000 2,000 Feet

Base Map: U.S. Geological Survey, EROS Data Center, 1996-1997, Arnsatt, Tex and Bulverde, Tex. Digital Raster Graphics (DRGs), Sioux Falls, SD. www.fhri.state.tx.us
 LAI Proj. No. 061212-07 H:\Projects\Johnson Ranch\GIS\Phase1A_Site\Johnson_Ranch_Edwards_Recharge_Map_Attachment_B_1.mxd August 8, 2007, J. Williams

Official 7 1/2 Minute USGS Quadrangle Map of the Edwards Recharge Zone



Legend

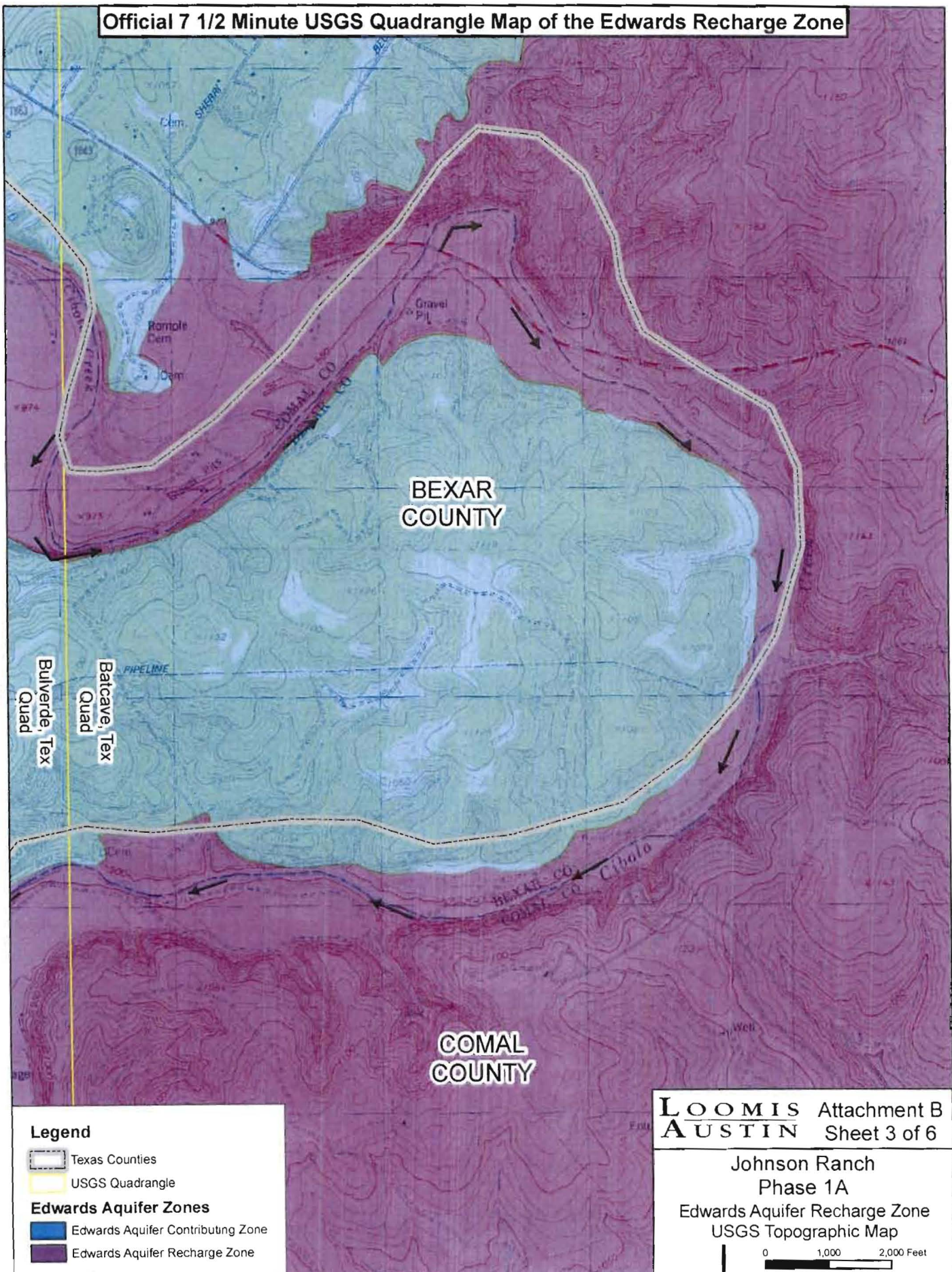
- Texas Counties
- USGS Quadrangle
- Edwards Aquifer Zones**
 - Edwards Aquifer Contributing Zone
 - Edwards Aquifer Recharge Zone

LOOMIS Attachment B
AUSTIN Sheet 2 of 6

Johnson Ranch
Phase 1A
Edwards Aquifer Recharge Zone
USGS Topographic Map

0 1,000 2,000 Feet

Official 7 1/2 Minute USGS Quadrangle Map of the Edwards Recharge Zone



Legend

- Texas Counties
- USGS Quadrangle

Edwards Aquifer Zones

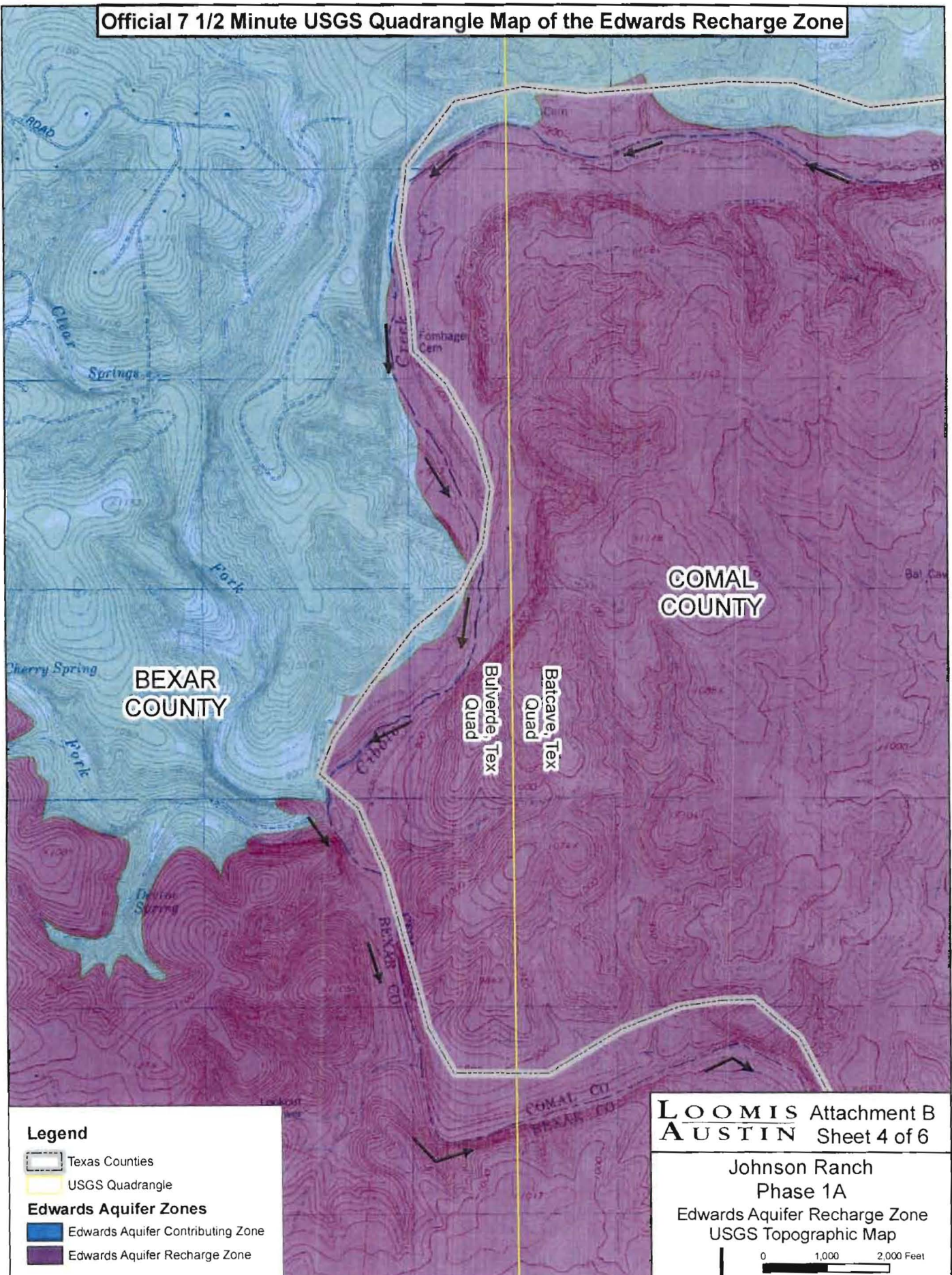
- Edwards Aquifer Contributing Zone
- Edwards Aquifer Recharge Zone

LOOMIS Attachment B
AUSTIN Sheet 3 of 6

Johnson Ranch
Phase 1A
Edwards Aquifer Recharge Zone
USGS Topographic Map

0 1,000 2,000 Feet

Official 7 1/2 Minute USGS Quadrangle Map of the Edwards Recharge Zone

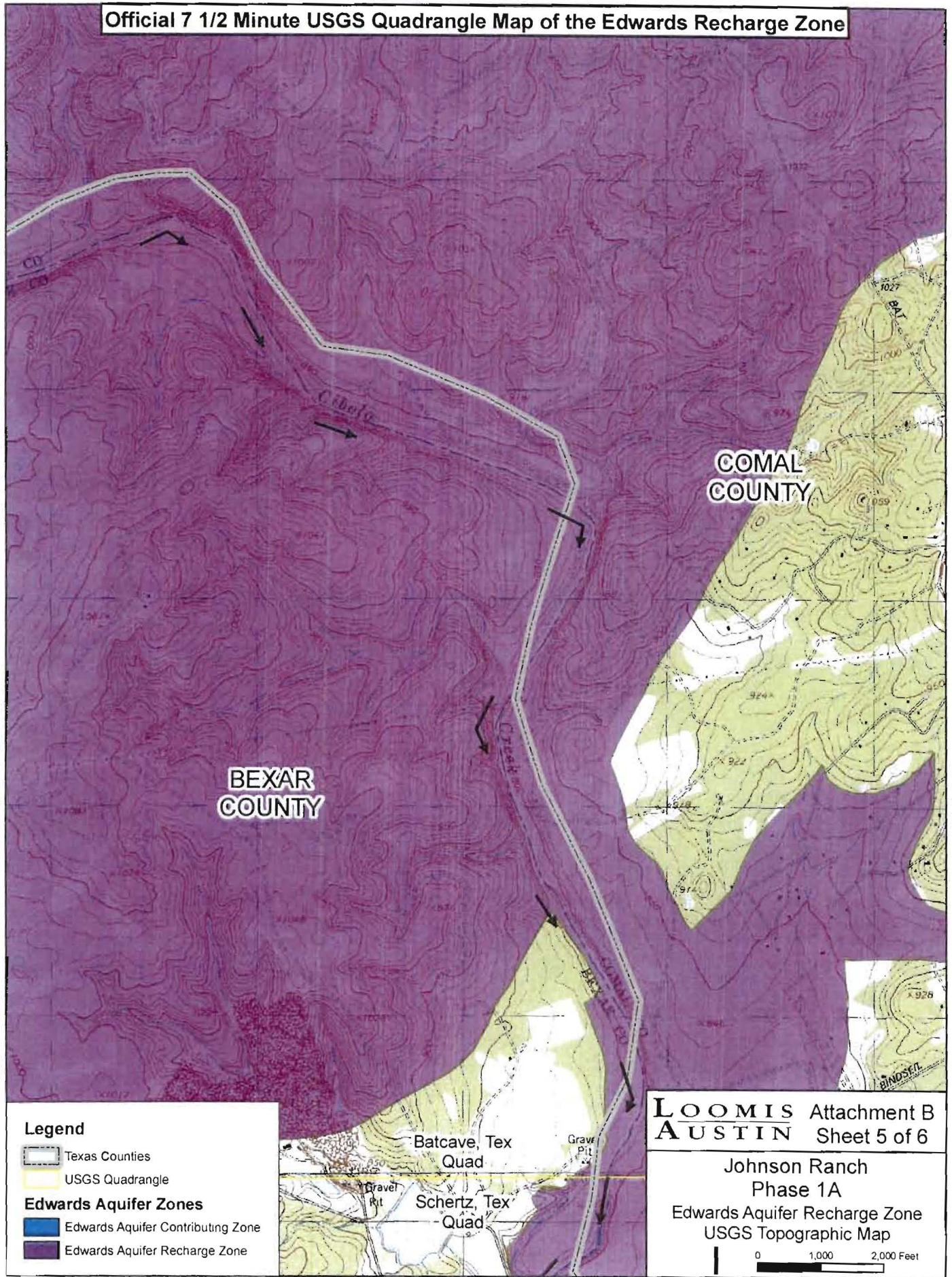


LOOMIS Attachment B
AUSTIN Sheet 4 of 6

Johnson Ranch
Phase 1A
Edwards Aquifer Recharge Zone
USGS Topographic Map

0 1,000 2,000 Feet

Official 7 1/2 Minute USGS Quadrangle Map of the Edwards Recharge Zone

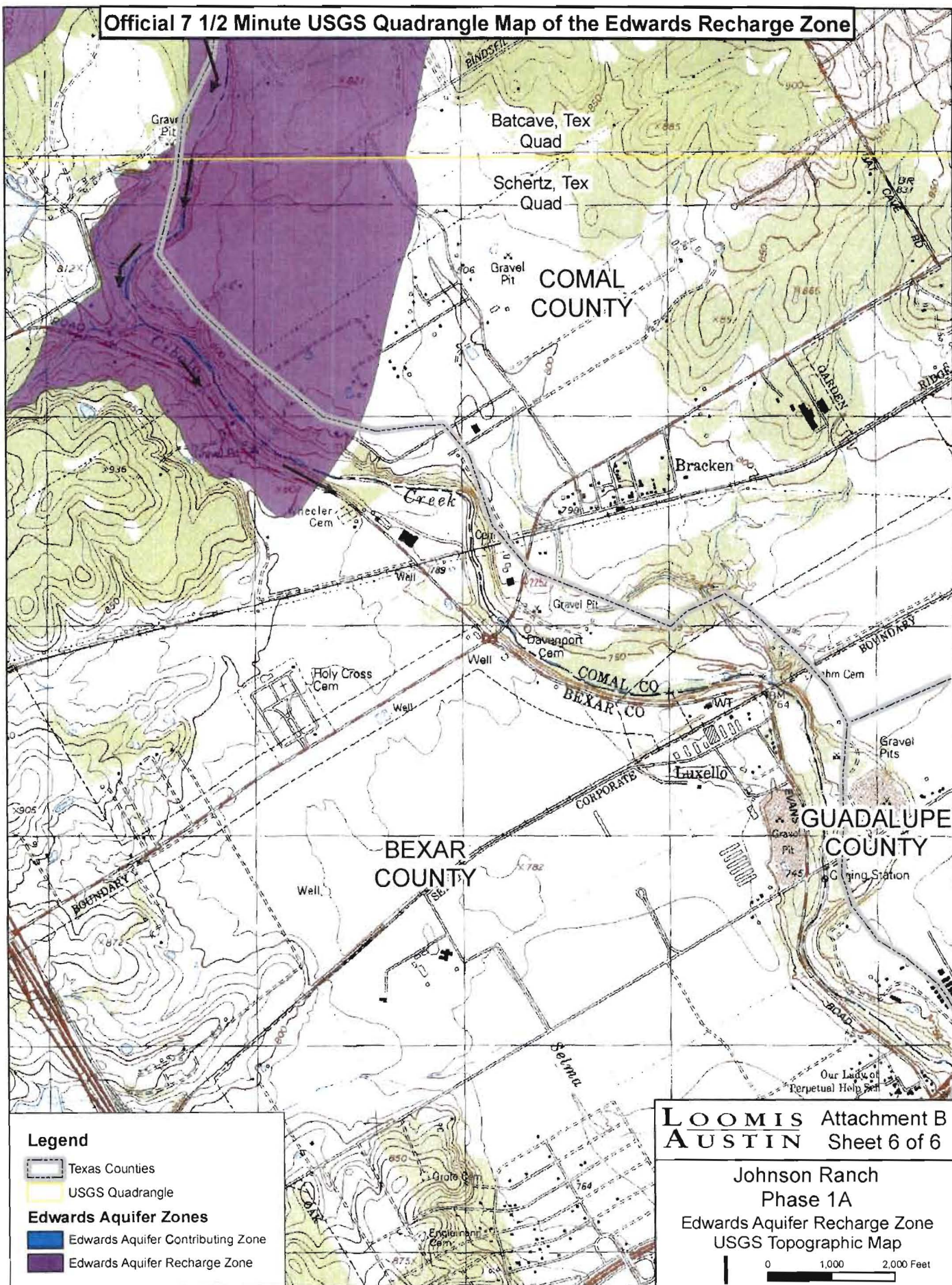


LOOMIS Attachment B
AUSTIN Sheet 5 of 6

Johnson Ranch
Phase 1A
Edwards Aquifer Recharge Zone
USGS Topographic Map

0 1,000 2,000 Feet

Official 7 1/2 Minute USGS Quadrangle Map of the Edwards Recharge Zone





Sound Science. Creative Solutions.

San Antonio Office
6200 UTSA Boulevard, Suite 102
San Antonio, TX 78249
Tel 210.877.2847 Fax 210.877.2848
www.swca.com

Charles W. Kaough
Loomis-Austin
3103 Bee Cave Rd., Suite 225
Austin, TX 78746

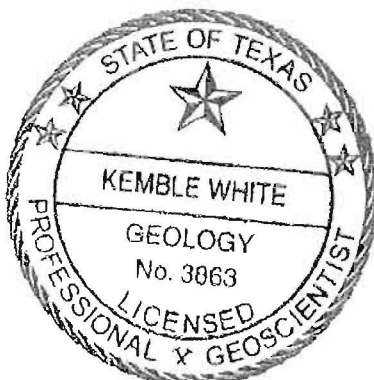
9 August 2007

As we have discussed I was the geologist who conducted the Texas Commission on Environmental Quality Geologic Assessment for the approximately 700-acre Johnson Ranch property located in Western Comal County north of Cibolo Creek and east of U.S. 281. Per your request, this letter verifies that I have reviewed the site plan for the Johnson Ranch Phase 1A site and have determined that no man-made or geologic features with the potential to rapidly transmit recharge to the Edwards Aquifer occur within the proposed project boundaries.

If you have any further questions or comments regarding this matter please do not hesitate to contact me by phone or by e-mail at kwhite@swca.com.

Sincerely,

Kemble White, Ph.D., P.G.



Geologic Assessment
For Regulated Activities
on The Edwards Aquifer Recharge/transition Zones
and Relating to 30 TAC §213.5(b)(3), Effective June 1, 1999

REGULATED ENTITY NAME: 700-Acre Johnson Ranch Property

TYPE OF PROJECT: ☒ WPAP ☐ AST ☐ SCS ☐ UST

LOCATION OF PROJECT: ☒ Recharge Zone ☐ Transition Zone ☐ Contributing Zone within the Transition Zone

PROJECT INFORMATION

1. ☒ Geologic or manmade features are described and evaluated using the attached **GEOLOGIC ASSESSMENT TABLE**.
2. Soil cover on the project site is summarized in the table below and uses the SCS Hydrologic Soil Groups* (*Urban Hydrology for Small Watersheds, Technical Release No. 55, Appendix A, Soil Conservation Service, 1986*). If there is more than one soil type on the project site, show each soil type on the site Geologic Map or a separate soils map.

Soil Units, Infiltration Characteristics & Thickness			* Soil Group Definitions (Abbreviated) A. Soils having a <u>high infiltration</u> rate when thoroughly wetted. B. Soils having a <u>moderate infiltration</u> rate when thoroughly wetted. C. Soils having a <u>slow infiltration</u> rate when thoroughly wetted. D. Soils having a <u>very slow infiltration</u> rate when thoroughly wetted.
Soil Name	Group*	Thickness (feet)	
Krum clay, 1 to 3 percent slopes (KrB)	D	>7	
Gruene Clay Series, 1 to 5 percent slopes (GrC)	C	>3	
Lewisville silty clay, 1 to 3 percent slopes (LeB)	B	>4	
Sunev silty clay loam, 0 to 1 percent slopes (SuA)	C	>4	

3. ☒ A **STRATIGRAPHIC COLUMN** is attached at the end of this form that shows formations, members, and thicknesses. The outcropping unit should be at the top of the stratigraphic column.
4. ☒ A **NARRATIVE DESCRIPTION OF SITE SPECIFIC GEOLOGY** is attached at the end of this form. The description must include a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure, and karst characteristics of the site.
5. ☒ Appropriate **SITE GEOLOGIC MAP(S)** are attached:

The Site Geologic Map must be the same scale as the applicant's Site Plan. The minimum scale is 1" : 400'

Applicant's Site Plan Scale

1" = 200'

Site Geologic Map Scale 1" = 200'
Site Soils Map Scale (if more than 1 soil type) 1" = 2,000'

6. ☒ Method of collecting positional data:
Global Positioning System (GPS) technology.
☐ Other method(s).
7. ☒ The project site is shown and labeled on the Site Geologic Map.
8. ☒ Surface geologic units are shown and labeled on the Site Geologic Map.
9. ☒ Geologic or manmade features were discovered on the project site during the field investigation. They are shown and labeled on the Site Geologic Map and are described in the attached Geologic Assessment Table.
☐ Geologic or manmade features were not discovered on the project site during the field investigation.
10. ☒ The Recharge Zone boundary is shown and labeled, if appropriate.
11. All known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.):
☒ There are 1 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
☐ The wells are not in use and have been properly abandoned.
☐ The wells are not in use and will be properly abandoned.
☒ The wells are in use and comply with 16 TAC Chapter 76.
☐ There are no wells or test holes of any kind known to exist on the project site.

ADMINISTRATIVE INFORMATION

12. ☒ One (1) original and three (3) copies of the completed assessment has been provided.

Date(s) Geologic Assessment was performed:

Date(s) 05 May 2005

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Kemble White TX RPG Lic# 3863
Print Name of Geologist

Telephone (512) 476-0891

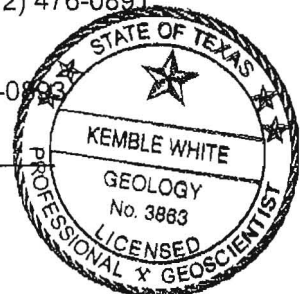


Signature of Geologist

Fax (512) 476-0893

15 Sept 05

Date



Representing: SWCA Environmental Consultants

(Name of Company)

If you have questions on how to fill out this form or about the Edwards Aquifer protection program, please contact us at 210/490-3096 for projects located in the San Antonio Region or 512/339-2929 for projects located in the Austin Region.

Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512/239-3282.

NARRATIVE DESCRIPTION OF SITE SPECIFIC GEOLOGY FOR AN APPROXIMATELY 50-ACRE PORTION OF THE 700-ACRE JOHNSON RANCH PROPERTY, COMAL COUNTY, TEXAS

INTRODUCTION

This narrative Geologic Assessment accompanies the Texas Commission on Environmental Quality (TCEQ) Geologic Assessment form #TNRCC-0585 completed for the approximately 700-acre Johnson Ranch Property ("the property"). The property borders the eastern side of highway 281 north of its intersection with FM 1863 in southern Comal County, Texas. An historic home located in the central portion of the property is excluded from the development area along with its water well. Most of the property occurs within the contributing zone to the Edwards Aquifer with approximately 50 acres occurring within the recharge zone adjacent to Cibolo Creek. Nearly all of the recharge zone portion of the property is covered by alluvium and, as a result, no geologic features were observed. One water well occurs in the northern portion of the property. Given the thickness of alluvial cover and the absence of recognizable geologic features, the potential for direct recharge of the Edwards Aquifer from the property is therefore very low.

METHODOLOGY

An SWCA registered professional geologist (Lic. #3863), an SWCA geologist and an environmental technician conducted a field survey for a Geologic Assessment of the property on 05 May 2005. As directed by TCEQ in the Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones (Rev. 5-1-02), the pedestrian survey was completed by walking parallel transects spaced approximately 50 feet apart within portion of the property classified as recharge zone. Closer spacing was used where vegetation inhibited clear observation. All potential karst features, including depressions, holes, and animal burrows, were carefully examined for evidence of subsurface extent. The features were flagged in the field with pink survey tape and their positions were recorded using a Global Positioning System (GPS) receiver. Portions of the property located within the contributing zone were surveyed by driving ranch roads and by walking short transects away from ranch roads in order to verify the accuracy of previous geological mapping.

RESULTS

Site Description

The property is mapped on the USGS Anhalt, Texas 7.5-Minute quadrangle. The topography of the property is gentle to undulating, sloping generally from northwest to south with elevations ranging from approximately 1,015 to 1,280 feet.¹ North and central portions of the property are located entirely within the Edwards Aquifer contributing zone. An unnamed tributary of Lewis Creek runs along the northern portion of the property. Undulating topography on the property, drains generally to the east and south toward a tributary of Lewis Creek and south towards Cibolo Creek. The southern approximately 50 acres of the property just below a forked tributary of Cibolo Creek lie within the Edwards Aquifer recharge zone.

Vegetation on the property is a mixture of pasture and open woodland. Grassy openings are dominated by ryegrass (*Lolium sp.*), bermudagrass (*Cynodon dactylon*), King Ranch bluestem (*Andropogon*

¹ United States Geological Survey. Anhalt, Texas 7.5-Minute quadrangle map.

ischaemum L.) and various forbs. Common woody species include live oak (*Quercus virginiana*), Texas persimmon (*Diospyros texana*), prickly pear cactus (*Opuntia lindheimeri*), and agarita (*Berberis trifoliata*). Ashe juniper (*Juniperus ashei*) is uncommon on the property compared to surrounding areas.

Geology

Rocks outcropping on the property are Quaternary and Cretaceous in age and consist of Alluvium, Terrace alluvium, Undivided slope wash, and the Upper Glen Rose Formation. The geology of the area has been mapped most recently at a useful scale by Collins², and SWCA concurs with the findings of that mapping effort. In general the thickness of alluvial cover on the portion of the property classified as recharge zone is sufficient that significant recharge is very unlikely to occur on the property. The great majority of rainfall occurring on the property is more likely cycled back into the atmosphere by evapotranspiration.

The property is located on the Balcones Fault Zone (BFZ). During the middle Tertiary, structural down warping occurred to the southeast associated with the formation of the ancestral Gulf of Mexico. The earth's crust was stretched in response, and the BFZ formed along an area of weakness that today marks the boundary between the Edwards Plateau and the Gulf Coastal Plain throughout central Texas. The zone consists of a series of northeast-trending, predominantly normal, nearly vertical, en echelon faults. As is typical of faults in the area, erosion, sedimentation, and vegetation have largely obscured the precise location of fault outcrops in the field. Fault locations provided on the site geologic map were determined by matching air photo lineations and data from previous maps with field observations of fault outcrops. The faults on the property were not considered by SWCA to be of any hydrologic significance because they are either buried by alluvium or occur outside of the recharge zone. They are therefore not included as geologic features in this report.

Soils

Soils on the property are mapped within nine different associations (See Site Soils Map)³: They include the Bolar clay loam, gently sloping (BrB); Bracket-Rock outcrop-Comfort complex undulating (BtD) and Real steep (BtG); Comfort-Rock outcrop complex, undulating (CrD); Gruene clay (GrC); Krum clay, 0 to 1 percent slopes (KrA) and 1 to 3 percent slopes (KrB); Lewisville silty clay (LeB); Purves clay (PuC); Real-Comfort-Doss complex, undulating (RcD); and Sunev silty clay loam (SuA). Soils overlying the Recharge Zone on the property were listed in a table on the Geologic Assessment cover page as number 2. Soils that comprise the majority of the property include the Real steep, Comfort-Rock outcrop complex, undulating, and Krum clay, 1 to 3 percent slopes, soils associations. Soils series occurring within the Recharge Zone are listed in the soils table. With respect to permeability, the soils with low water capacity generally have moderate to slow infiltration rates, causing run off to be predominant. Surface runoff ranges from slow to rapid for the largest soil association, BtG, mapped on the northern portion of the property.

Geologic or Man-made Features

No geologic features of significance were observed on the property. One water well was located in the northern part of the property in the contribution zone.

² Collins, E. W. 1993 Geologic Map of the Bulverde Quadrangle, Texas. Bureau of Economic Geology Open-File Report.
Collins, E. W. 2000. Geologic Map of the New Braunfels, Texas, 30x60 Quadrangle. Geologic Framework of an Urban-Growth Corridor along the Edwards Aquifer, South Central Texas.

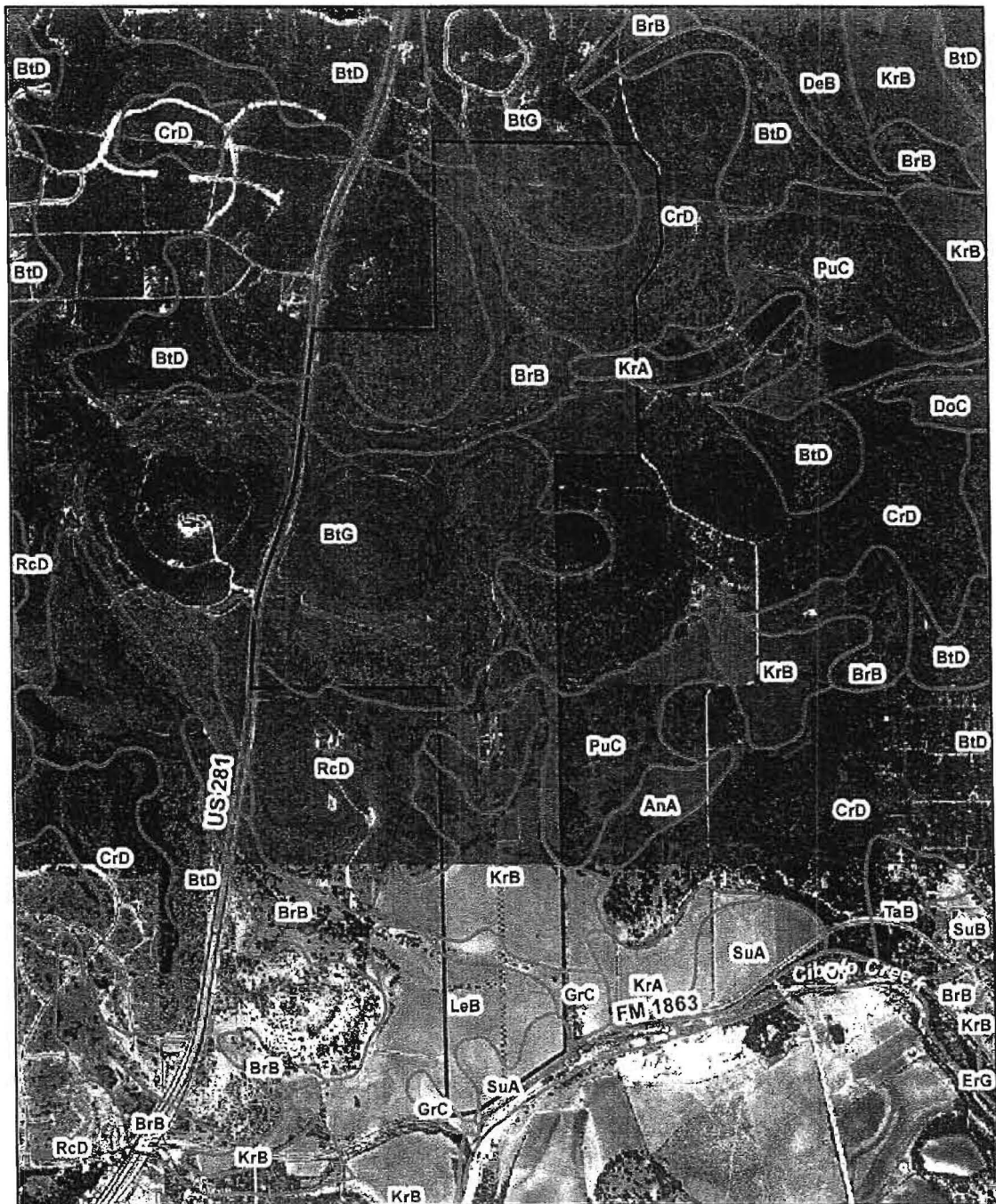
³ United States Department of Agriculture, Soil Conservation Service, Soil Survey for Comal County, Texas

Stratigraphic Column

Note: The shaded areas represent the lithology that outcrops on the property.¹

Upper Cretaceous	Upper Confining Units		Navarro and Taylor Groups, undivided; 600 feet thick	
			Austin Group; 130-150 feet thick	
			Eagle Ford Group; 30-50 feet thick	
			Buda Limestone; 40-50 feet thick	
			Del Rio Clay; 40-50 feet thick	
Lower Cretaceous	I	Edwards Aquifer Edwards Group	Georgetown Formation	10-40 feet thick
	II		Person Formation; 170-200 feet thick	Cyclic and Marine member, undivided
	III			Leached and Collapsed member, undivided
	IV			Regional Dense member
	V		Kainer Formation; 260-310 feet thick	Grainstone member
	VI			Kirschberg Evaporite member
	VII			Dolomitic member
	VIII			Basal Nodular member
	Lower Confining Units		Upper member of Glen Rose Limestone; 350-500 feet thick	

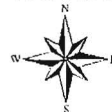
¹ Modified From: Stein, W. G., and Ozuna, G. B. 1995. Geologic framework and hydrogeologic characteristics of the Edwards aquifer recharge zone, Bexar County, Texas. U.S. Geologic Survey, WRI 95-4030.



0 2,000 4,000 Feet

Approximate Property Boundary
Soil Boundary

Map produced using the USGS 1-meter Anhalt and Bulverde DOQs.



SWCA
ENVIRONMENTAL CONSULTANTS

Soils Map for the Johnson Ranch Property.



ENVIRONMENTAL CONSULTANTS

Sound Science. Creative Solutions.

San Antonio Office
6200 UTSA Boulevard, Suite 102
San Antonio, TX 78249
Tel 210.877.2847 Fax 210.877.2848
www.swca.com

Charles W. Kaough
Loomis-Austin
3103 Bee Cave Rd., Suite 225
Austin, TX 78746

9 August 2007

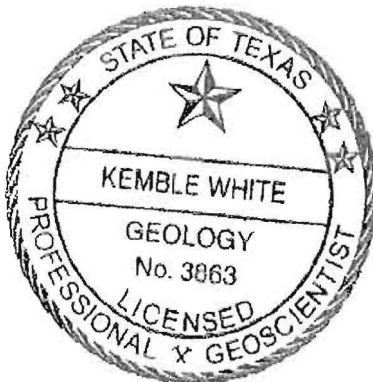
As we have discussed I was the geologist who conducted the Texas Commission on Environmental Quality Geologic Assessment for the approximately 700-acre Johnson Ranch property located in Western Comal County north of Cibolo Creek and east of U.S. 281. Per your request, this letter verifies that I have reviewed the site plan for the Johnson Ranch Phase 1A site and have determined that no man-made or geologic features with the potential to rapidly transmit recharge to the Edwards Aquifer occur within the proposed project boundaries.

If you have any further questions or comments regarding this matter please do not hesitate to contact me by phone or by e-mail at kwhite@swca.com.

Sincerely,

A handwritten signature in dark ink, appearing to read "Kemble White".

Kemble White, Ph.D., P.G.



Geologic Assessment
For Regulated Activities
on The Edwards Aquifer Recharge/transition Zones
and Relating to 30 TAC §213.5(b)(3), Effective June 1, 1999

REGULATED ENTITY NAME: 700-Acre Johnson Ranch Property

TYPE OF PROJECT: ☒ WPAP ☐ AST ☐ SCS ☐ UST

LOCATION OF PROJECT: ☒ Recharge Zone ☐ Transition Zone ☐ Contributing Zone within the Transition Zone

PROJECT INFORMATION

1. ☒ Geologic or manmade features are described and evaluated using the attached **GEOLOGIC ASSESSMENT TABLE**.
2. Soil cover on the project site is summarized in the table below and uses the SCS Hydrologic Soil Groups* (*Urban Hydrology for Small Watersheds, Technical Release No. 55, Appendix A, Soil Conservation Service, 1986*). If there is more than one soil type on the project site, show each soil type on the site Geologic Map or a separate soils map.

Soil Units, Infiltration Characteristics & Thickness			* Soil Group Definitions (Abbreviated) A. Soils having a <u>high infiltration</u> rate when thoroughly wetted. B. Soils having a <u>moderate infiltration</u> rate when thoroughly wetted. C. Soils having a <u>slow infiltration</u> rate when thoroughly wetted. D. Soils having a <u>very slow infiltration</u> rate when thoroughly wetted.
Soil Name	Group*	Thickness (feet)	
Krum clay, 1 to 3 percent slopes (KrB)	D	>7	
Gruene Clay Series, 1 to 5 percent slopes (GrC)	C	>3	
Lewisville silty clay, 1 to 3 percent slopes (LeB)	B	>4	
Sunev silty clay loam, 0 to 1 percent slopes (SuA)	C	>4	

3. ☒ A **STRATIGRAPHIC COLUMN** is attached at the end of this form that shows formations, members, and thicknesses. The outcropping unit should be at the top of the stratigraphic column.
4. ☒ A **NARRATIVE DESCRIPTION OF SITE SPECIFIC GEOLOGY** is attached at the end of this form. The description must include a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure, and karst characteristics of the site.
5. ☒ Appropriate **SITE GEOLOGIC MAP(S)** are attached:

The Site Geologic Map must be the same scale as the applicant's Site Plan. The minimum scale is 1" : 400'

Applicant's Site Plan Scale

1" = 200'

Site Geologic Map Scale 1" = 200'
Site Soils Map Scale (if more than 1 soil type) 1" = 2,000'

6. ☒ Method of collecting positional data:
Global Positioning System (GPS) technology.
☐ Other method(s).
7. ☒ The project site is shown and labeled on the Site Geologic Map.
8. ☒ Surface geologic units are shown and labeled on the Site Geologic Map.
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10. ☒ The Recharge Zone boundary is shown and labeled, if appropriate.
11. All known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.):
☒ There are 1 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
☐ The wells are not in use and have been properly abandoned.
☐ The wells are not in use and will be properly abandoned.
☒ The wells are in use and comply with 16 TAC Chapter 76.
☐ There are no wells or test holes of any kind known to exist on the project site.

ADMINISTRATIVE INFORMATION

12. ☒ One (1) original and three (3) copies of the completed assessment has been provided.


Date(s) Geologic Assessment was performed:

Date(s) 05 May 2005

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

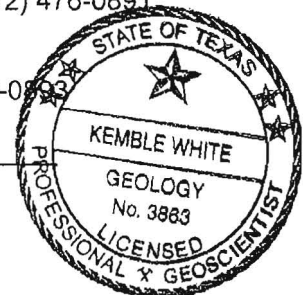
Kemble White TX RPG Lic# 3863
Print Name of Geologist

Telephone (512) 476-0891


Signature of Geologist

Fax (512) 476-0892

15 Sept 05
Date



Representing: SWCA Environmental Consultants
(Name of Company)

If you have questions on how to fill out this form or about the Edwards Aquifer protection program, please contact us at 210/490-3096 for projects located in the San Antonio Region or 512/339-2929 for projects located in the Austin Region.

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NARRATIVE DESCRIPTION OF SITE SPECIFIC GEOLOGY FOR AN APPROXIMATELY 50-ACRE PORTION OF THE 700-ACRE JOHNSON RANCH PROPERTY, COMAL COUNTY, TEXAS

INTRODUCTION

This narrative Geologic Assessment accompanies the Texas Commission on Environmental Quality (TCEQ) Geologic Assessment form #TNRCC-0585 completed for the approximately 700-acre Johnson Ranch Property ("the property"). The property borders the eastern side of highway 281 north of its intersection with FM 1863 in southern Comal County, Texas. An historic home located in the central portion of the property is excluded from the development area along with its water well. Most of the property occurs within the contributing zone to the Edwards Aquifer with approximately 50 acres occurring within the recharge zone adjacent to Cibolo Creek. Nearly all of the recharge zone portion of the property is covered by alluvium and, as a result, no geologic features were observed. One water well occurs in the northern portion of the property. Given the thickness of alluvial cover and the absence of recognizable geologic features, the potential for direct recharge of the Edwards Aquifer from the property is therefore very low.

METHODOLOGY

An SWCA registered professional geologist (Lic. #3863), an SWCA geologist and an environmental technician conducted a field survey for a Geologic Assessment of the property on 05 May 2005. As directed by TCEQ in the Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones (Rev. 5-1-02), the pedestrian survey was completed by walking parallel transects spaced approximately 50 feet apart within portion of the property classified as recharge zone. Closer spacing was used where vegetation inhibited clear observation. All potential karst features, including depressions, holes, and animal burrows, were carefully examined for evidence of subsurface extent. The features were flagged in the field with pink survey tape and their positions were recorded using a Global Positioning System (GPS) receiver. Portions of the property located within the contributing zone were surveyed by driving ranch roads and by walking short transects away from ranch roads in order to verify the accuracy of previous geological mapping.

RESULTS

Site Description

The property is mapped on the USGS Anhalt, Texas 7.5-Minute quadrangle. The topography of the property is gentle to undulating, sloping generally from northwest to south with elevations ranging from approximately 1,015 to 1,280 feet.¹ North and central portions of the property are located entirely within the Edwards Aquifer contributing zone. An unnamed tributary of Lewis Creek runs along the northern portion of the property. Undulating topography on the property, drains generally to the east and south toward a tributary of Lewis Creek and south towards Cibolo Creek. The southern approximately 50 acres of the property just below a forked tributary of Cibolo Creek lie within the Edwards Aquifer recharge zone.

Vegetation on the property is a mixture of pasture and open woodland. Grassy openings are dominated by ryegrass (*Lolium sp.*), bermudagrass (*Cynodon dactylon*), King Ranch bluestem (*Andropogon*

¹ United States Geological Survey. Anhalt, Texas 7.5-Minute quadrangle map.

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The property is located on the Balcones Fault Zone (BFZ). During the middle Tertiary, structural down warping occurred to the southeast associated with the formation of the ancestral Gulf of Mexico. The earth's crust was stretched in response, and the BFZ formed along an area of weakness that today marks the boundary between the Edwards Plateau and the Gulf Coastal Plain throughout central Texas. The zone consists of a series of northeast-trending, predominantly normal, nearly vertical, en echelon faults. As is typical of faults in the area, erosion, sedimentation, and vegetation have largely obscured the precise location of fault outcrops in the field. Fault locations provided on the site geologic map were determined by matching air photo lineations and data from previous maps with field observations of fault outcrops. The faults on the property were not considered by SWCA to be of any hydrologic significance because they are either buried by alluvium or occur outside of the recharge zone. They are therefore not included as geologic features in this report.

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Geologic or Man-made Features

No geologic features of significance were observed on the property. One water well was located in the northern part of the property in the contribution zone.

² Collins, E.W. 1993 Geologic Map of the Bulverde Quadrangle, Texas. Bureau of Economic Geology Open-File Report.
Collins, E.W. 2000. Geologic Map of the New Braunfels, Texas, 30x60 Quadrangle: Geologic Framework of an Urban-Growth Corridor along the Edwards Aquifer, South Central Texas.

³ United States Department of Agriculture, Soil Conservation Service, Soil Survey for Comal County, Texas

Stratigraphic Column

Note: The shaded areas represent the lithology that outcrops on the property.¹

Note: The shaded areas represent the hydrology that outcrops on the property.					
Upper Cretaceous	Upper Confining Units			Navarro and Taylor Groups, undivided; 600 feet thick	
				Austin Group; 130-150 feet thick	
				Eagle Ford Group; 30-50 feet thick	
				Buda Limestone; 40-50 feet thick	
				Del Rio Clay; 40-50 feet thick	
Lower Cretaceous	I	Edwards Aquifer	Edwards Group	Georgetown Formation	10-40 feet thick
	II			Person Formation; 170-200 feet thick	Cyclic and Marine member, undivided
	III				Leached and Collapsed member, undivided
	IV				Regional Dense member
	V			Kainer Formation; 260-310 feet thick	Grainstone member
	VI				Kirschberg Evaporite member
	VII				Dolomitic member
	VIII				Basal Nodular member
	Lower Confining Units			Upper member of Glen Rose Limestone; 350-500 feet thick	

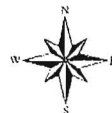
¹ Modified From: Stein, W. G., and Ozuna, G. B. 1995. Geologic framework and hydrogeologic characteristics of the Edwards aquifer recharge zone, Bexar County, Texas. U.S. Geologic Survey, WRJ 95-4030.



0 2,000 4,000
Feet

- Approximate Property Boundary
- Soil Boundary

Map produced using the USGS 1-meter
Anhaalt and Bulverde DOQs.



SWCA
ENVIRONMENTAL CONSULTANTS

Soils Map for the Johnson Ranch Property.

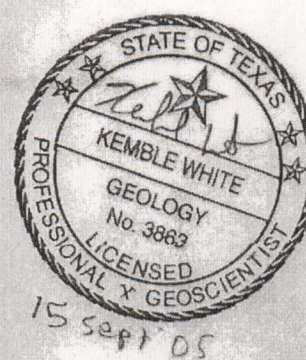
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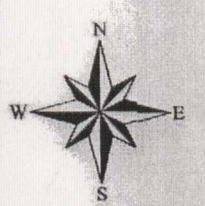
Legend

- Approximate Property Boundary
- Waterwell
- Fault
- Inferred Fault
- Qal Quaternary Alluvium
- Qt Quaternary Terrace Deposits
- Qu Undivided Alluvium
- Kgru Upper member of Glen Rose Limestone

Site Geologic Map for the North Half of the Johnson Ranch Property



Map produced using the USGS 1-meter
Anhalt DOQ.
Geology and Faults from UTBEG, Collins,
2000
SWCA Project No. 9583-099



SWCA
ENVIRONMENTAL CONSULTANTS



Edwards Aquifer
Contributing Zone

JOHNSON
RANCH
PHASE 1A

Recharge Zone

Legend

- Approximate Property Boundary
- 100-Year Floodplain
- Edwards Aquifer Recharge Zone Boundary
- Fault
- Inferred Fault
- Quaternary Alluvium
- Quaternary Terrace Deposits
- Undivided Alluvium
- Upper member of Glen Rose Limestone

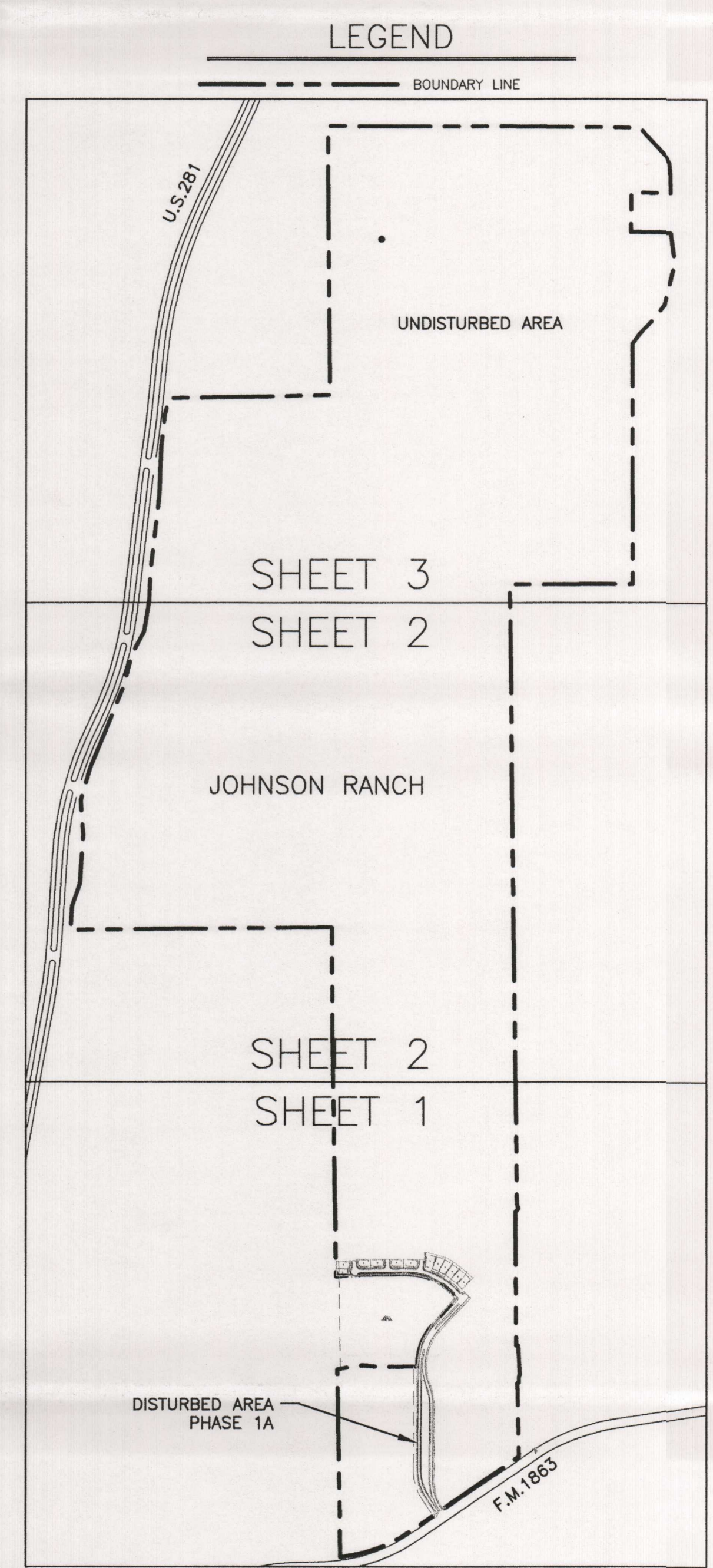
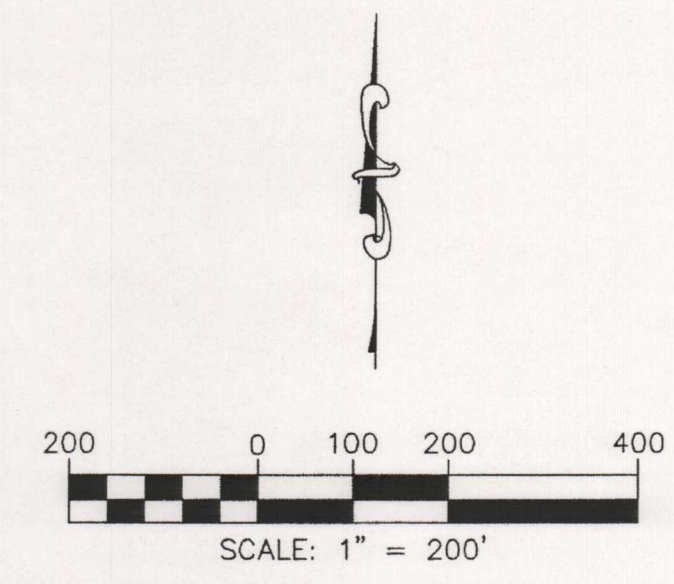
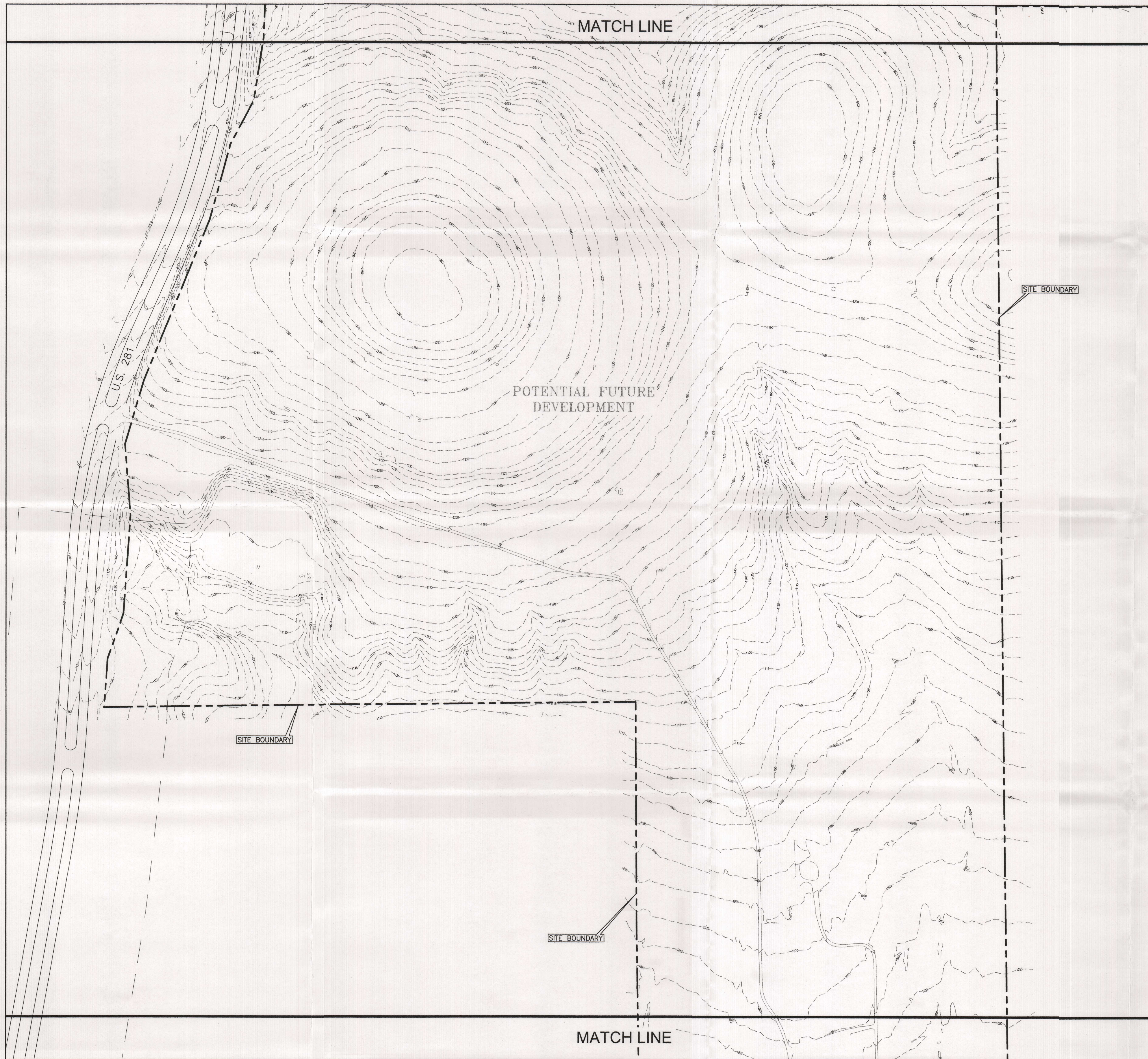
Site Geologic Map Johnson Ranch Property




Map produced using the USGS 1-meter
Anhalt and Bulverde DDOs.
Geology and Faults from UTREG, Collins,
et al., 1998.
SWCA Project No. 9583-089

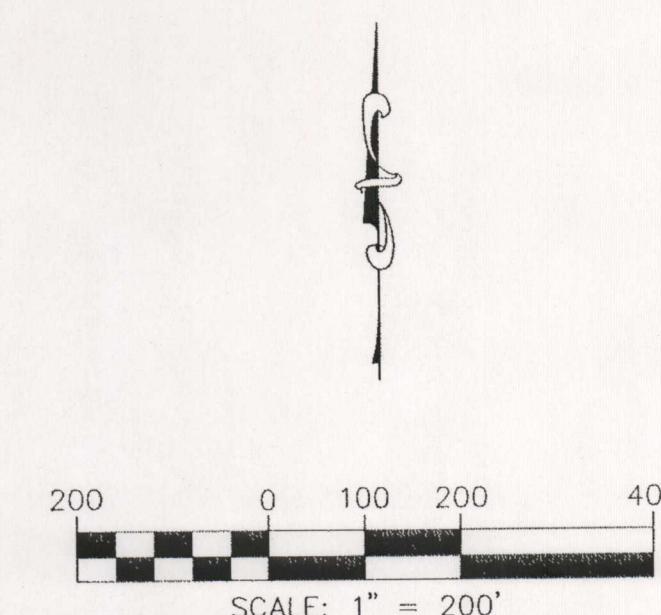
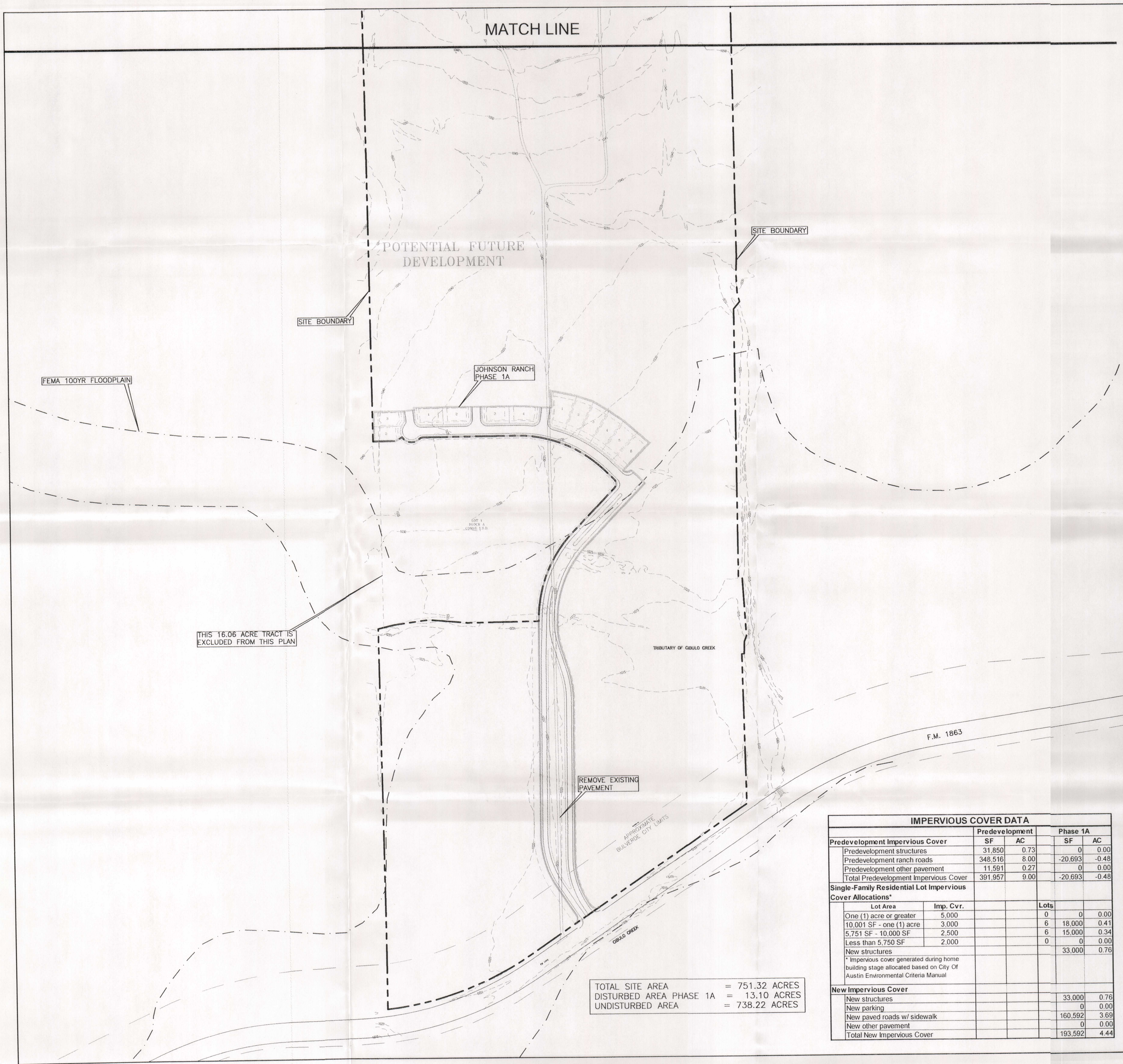


SWCA
ENVIRONMENTAL CONSULTANTS

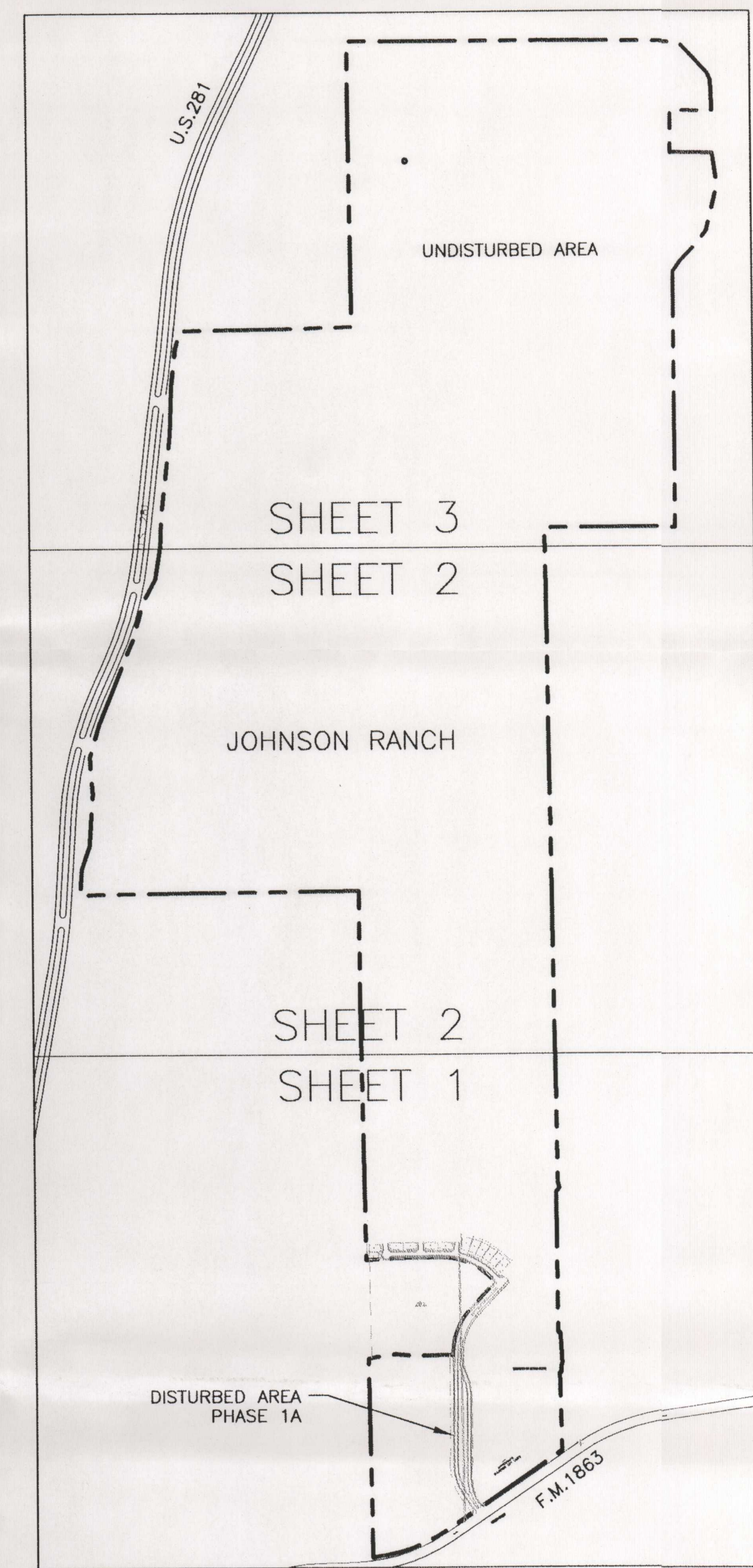


INDEX MAP

SHEET NO. 2	JOHNSON RANCH PHASE 1A PROPOSED CONDITIONS SITE PLAN 2 OF 3	 LOOMIS AUSTIN ENGINEERING, LAND SURVEYING & ENVIRONMENTAL CONSULTING 3103 Bee Cave Road • Suite 225 • Austin Texas 78746 Phone: (512) 327-1180 • Fax: (512) 327-4062 • www.loomisaustin.com	DESIGNED BY: C.K. DRAWN BY: N.T. CHECKED BY: C.K. APPROVED BY: C.K. DATE: August 9, 2007	NO.	REVISION	BY	DATE



LEGEND
--- BOUNDARY LINE



INDEX MAP

IMPERVIOUS COVER DATA					
		Predevelopment		Phase 1A	
Predevelopment Impervious Cover		SF	AC	SF	AC
	Predevelopment structures	31,850	0.73	0	0.00
	Predevelopment ranch roads	348,516	8.00	-20,693	-0.48
	Predevelopment other pavement	11,591	0.27	0	0.00
	Total Predevelopment Impervious Cover	391,957	9.00	-20,693	-0.48
Single-Family Residential Lot Impervious Cover Allocations*					
	Lot Area	Imp. Cvr.		Lots	
	One (1) acre or greater	5,000		0	0.00
	10,001 SF - one (1) acre	3,000		6	18,000 0.41
	5,751 SF - 10,000 SF	2,500		6	15,000 0.34
	Less than 5,750 SF	2,000		0	0.00
	New structures			33,000	0.76
* Impervious cover generated during home building stage allocated based on City Of Austin Environmental Criteria Manual					
New Impervious Cover					
	New structures			33,000	0.76
	New parking			0	0.00
	New paved roads w/ sidewalk			160,592	3.69
	New other pavement			0	0.00
	Total New Impervious Cover			193,592	4.44

TOTAL SITE AREA = 751.32 ACRES
DISTURBED AREA PHASE 1A = 13.10 ACRES
UNDISTURBED AREA = 738.22 ACRES

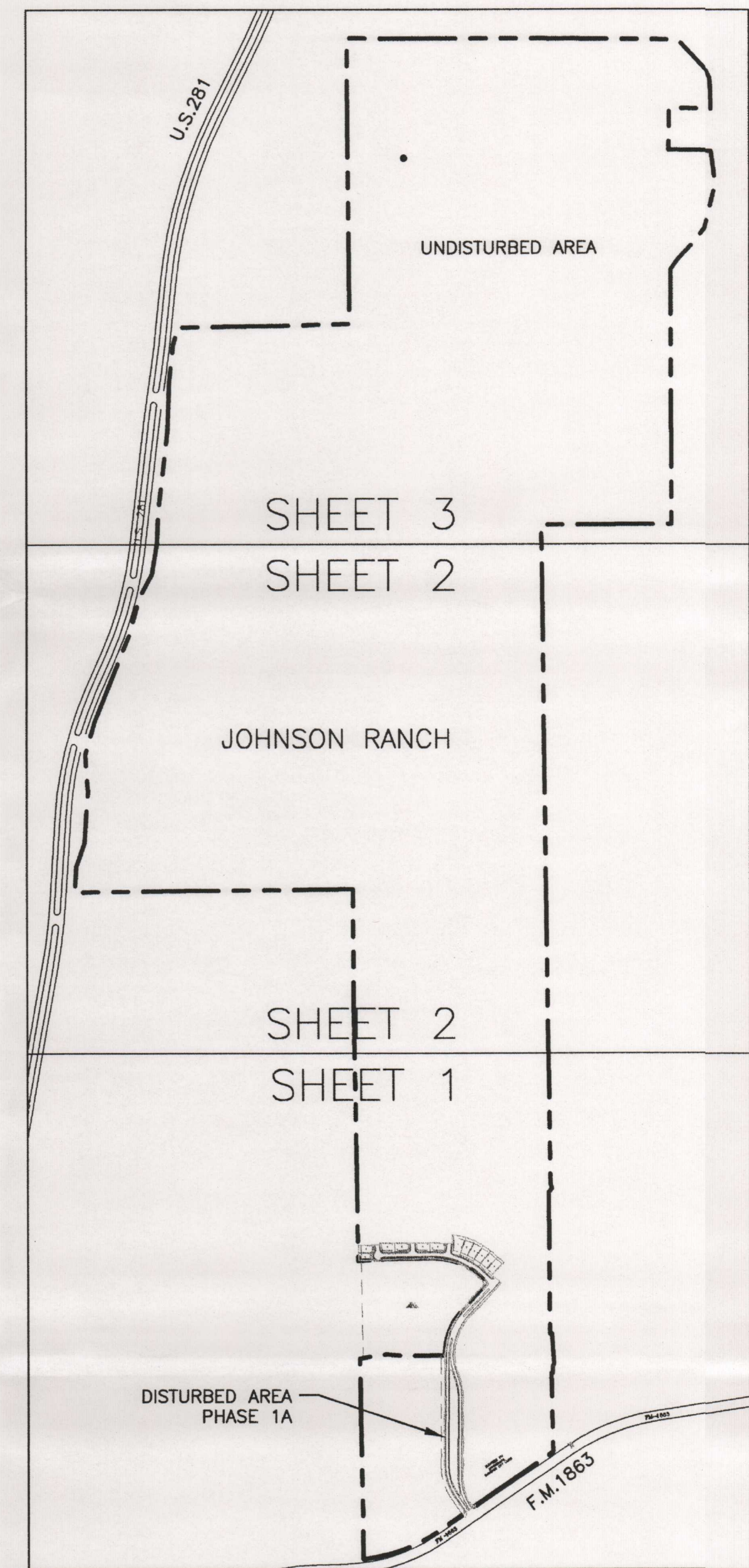
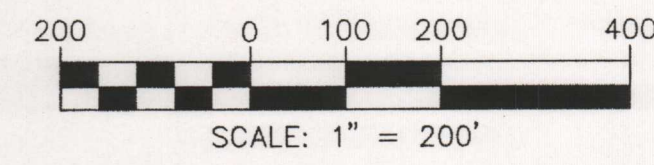
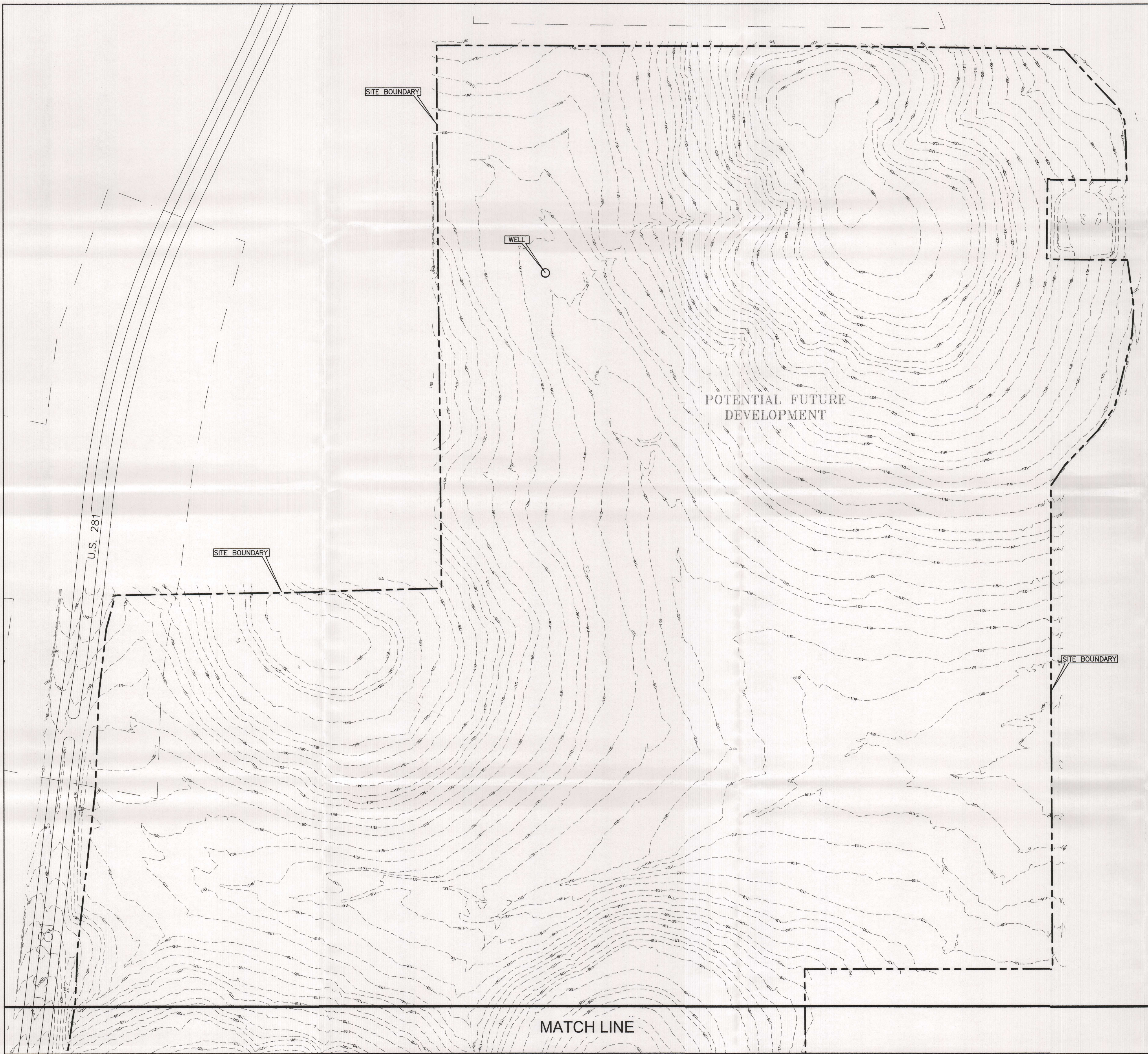
IMPERVIOUS COVER SUMMARY	
Predevelopment	
Total Predevelopment Impervious Cover	9.00 acres
Predevelopment Impervious Cover to be Removed with this application	-0.48 acres
Predevelopment Impervious Cover Remaining	8.52 acres
Development Associated with WPAP	
Impervious Cover Allocations with this application	4.44 acres
Total Impervious Cover on Project Site	12.97 acres
Net Impervious Cover Impact on Project	
Net Increase to Impervious Cover associated with single-family residential development (area)	3.97 acres
Total Project Area	751.30 acres
Net Increase to Impervious Cover associated with single-family residential development (%)	0.53%

DESIGNED BY: C.K.
DRAWN BY: N.T.
CHECKED BY: C.K.
APPROVED BY: C.K.
DATE: AUGUST 9, 2007

JOHNSON RANCH
PHASE 1A
PROPOSED CONDITIONS
SITE PLAN
1 OF 3

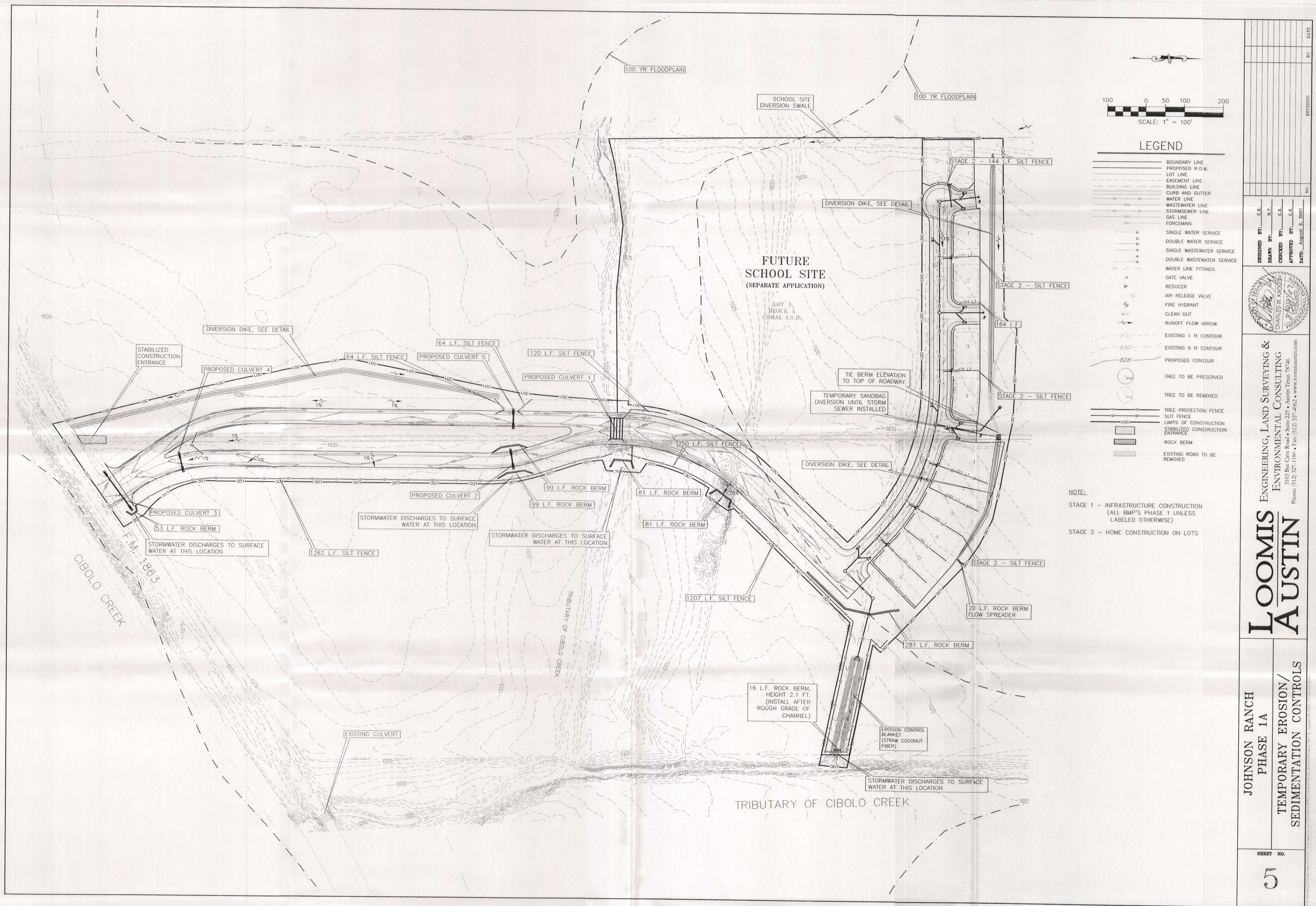
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APPROVED BY: C.K.
DATE: AUGUST 9, 2007

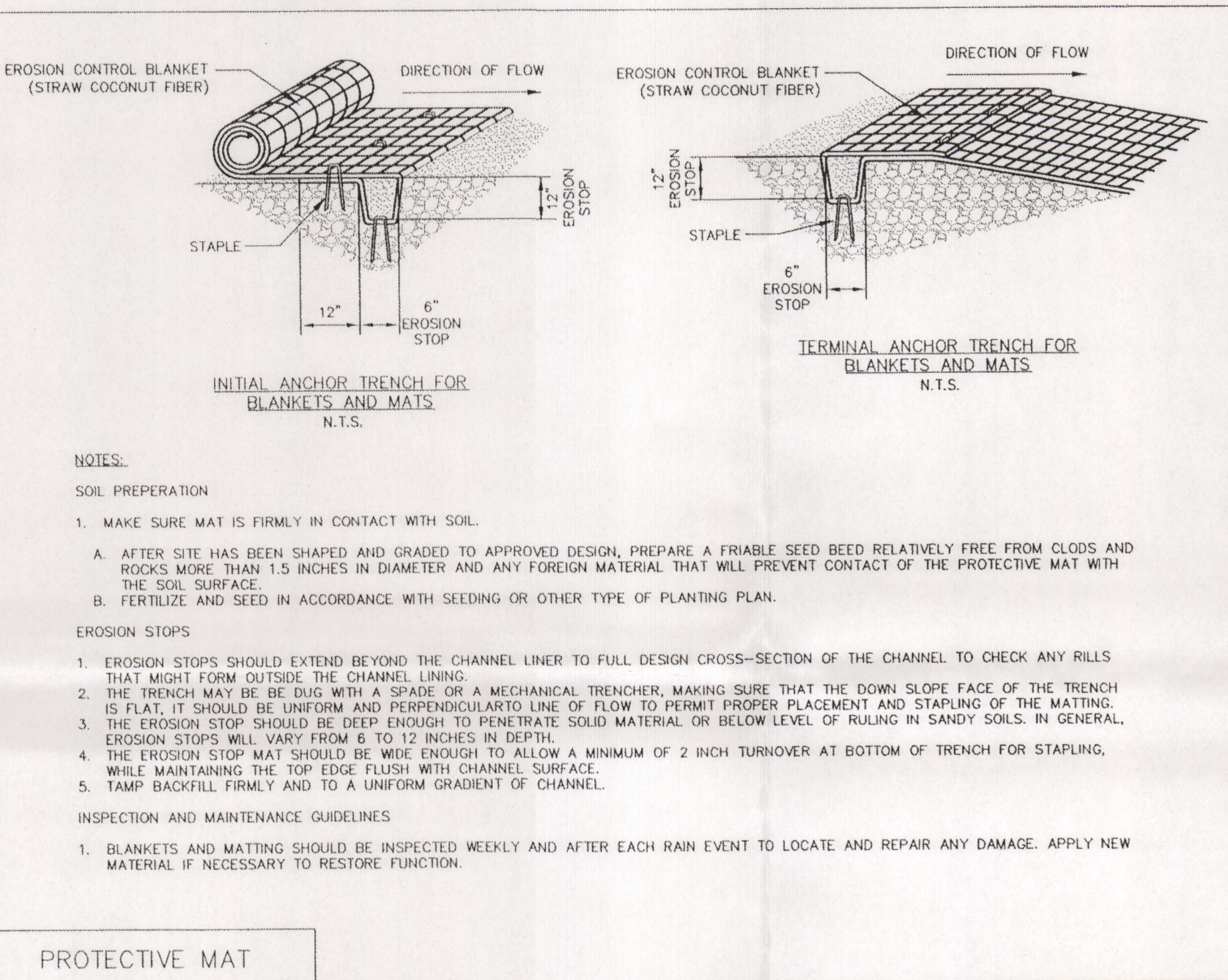
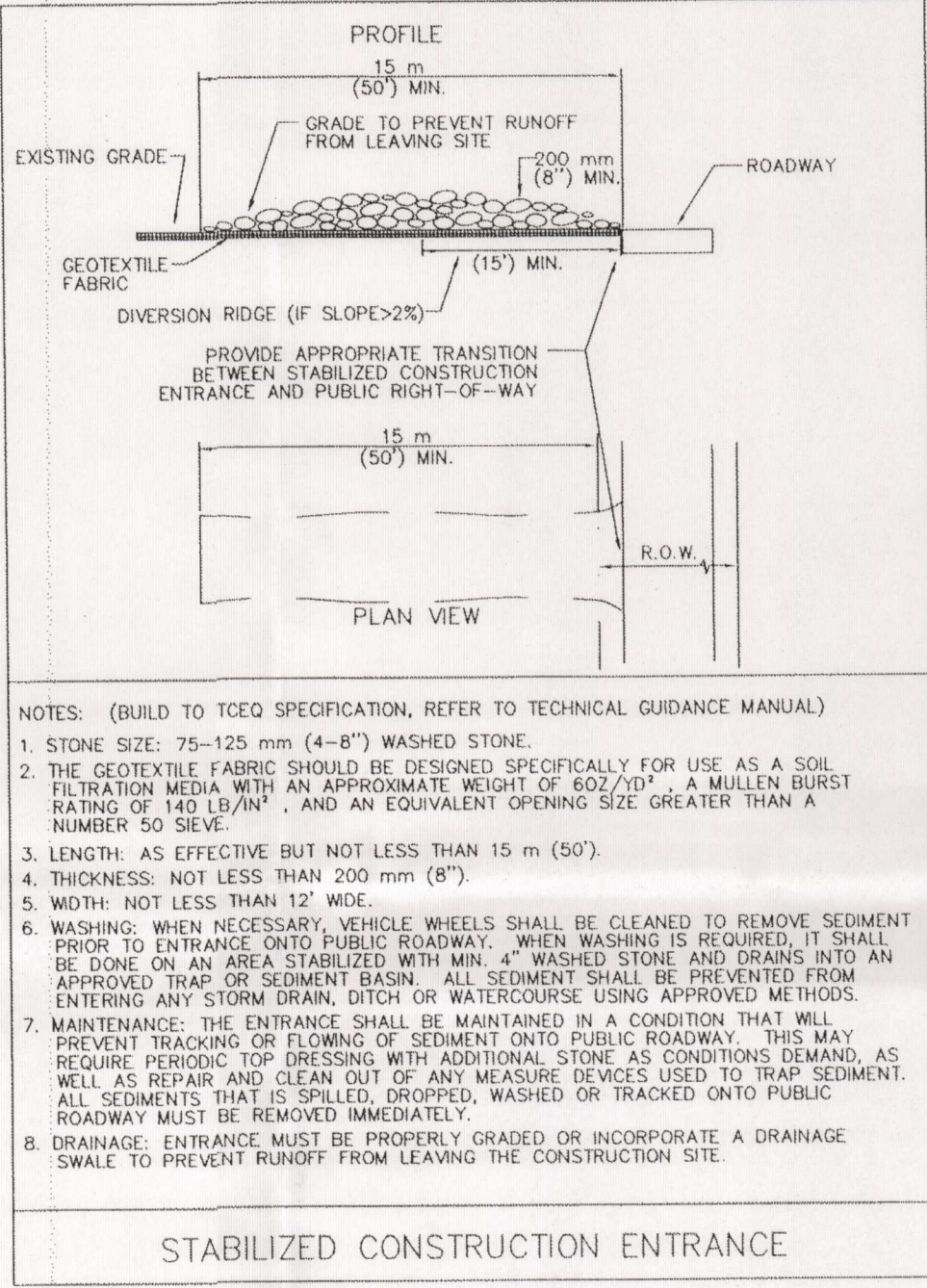
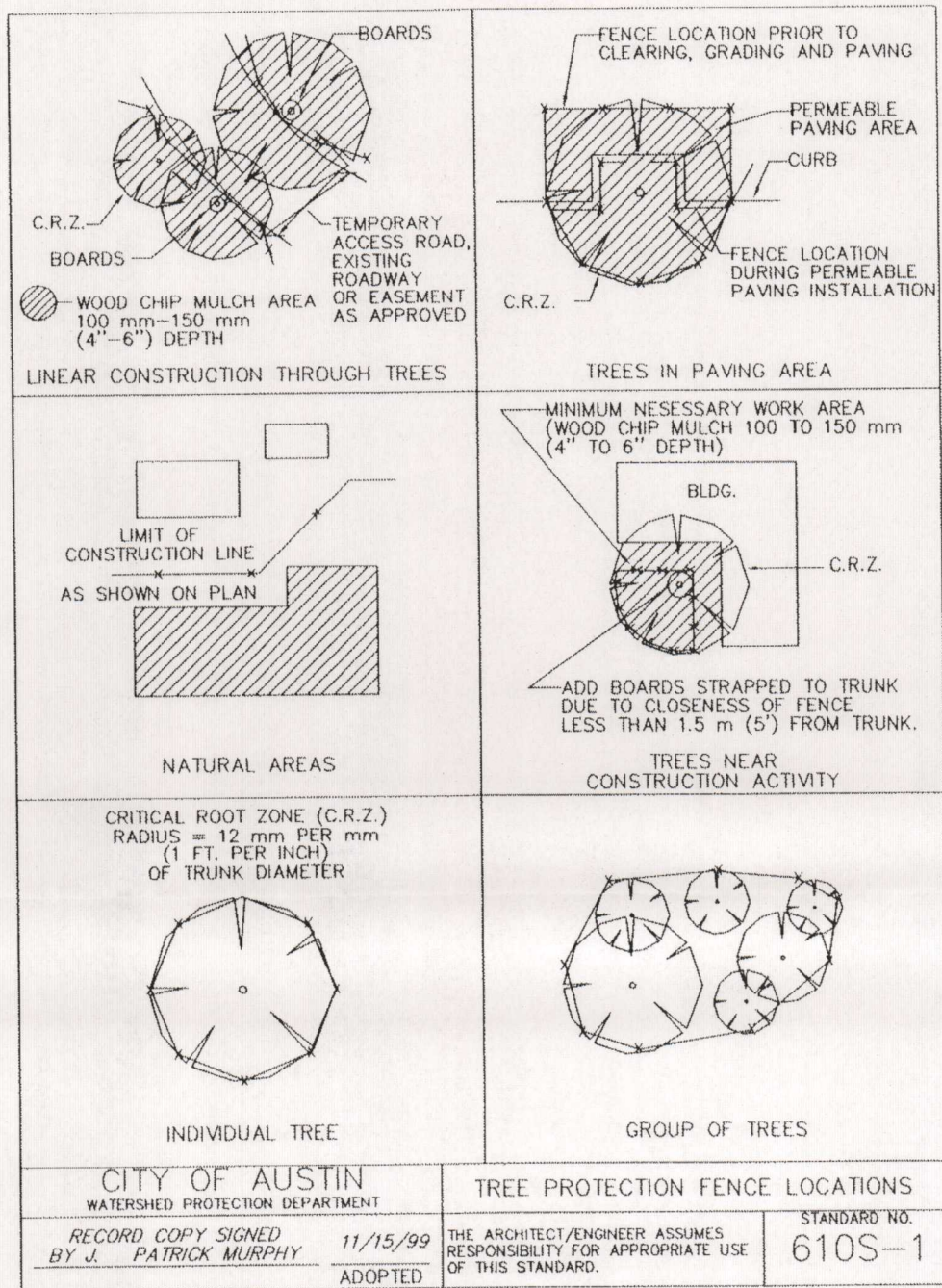
REVISION
BY
DATE



INDEX MAP

JOHNSON RANCH PHASE 1A PROPOSED CONDITIONS SITE PLAN 3 OF 3		LLOOMIS AUSTIN ENGINEERING, LAND SURVEYING & ENVIRONMENTAL CONSULTING 3103 Bee Cave Road • Suite 225 • Austin Texas 78746 Phone: (512) 327-1180 • Fax: (512) 327-4402 • www.lloomisaustin.com		DESIGNED BY: C.K. DRAWN BY: N.T. CHECKED BY: C.K. APPROVED BY: C.K. DATE: August 9, 2007		BY REVISION NO.	
3		SHEET NO.		NO.		BY	





TCEQ-0592 (REV. 3/15/07)

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY WATER POLLUTION ABATEMENT PLAN GENERAL CONSTRUCTION NOTES

- WRITTEN CONSTRUCTION NOTIFICATION MUST BE GIVEN TO THE APPROPRIATE TCEQ REGIONAL OFFICE NO LATER THAN 48 HOURS PRIOR TO COMMENCEMENT OF THE REGULATED ACTIVITY. INFORMATION MUST INCLUDE THE DATE ON WHICH THE REGULATED ACTIVITY WILL COMMENCE, THE NAME OF THE APPROVED PLAN FOR THE REGULATED ACTIVITY, AND THE NAME OF THE PRIME CONTRACTOR AND THE NAME AND TELEPHONE NUMBER OF THE CONTACT PERSON.
- ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROJECT MUST BE PROVIDED WITH COMPLETE COPIES OF THE APPROVED WATER POLLUTION ABATEMENT PLAN AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTORS ARE REQUIRED TO KEEP ON-SITE COPIES OF THE APPROVED PLAN AND APPROVAL LETTER.
- IF ANY SENSITIVE FEATURE IS DISCOVERED DURING CONSTRUCTION, ALL REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MUST BE SUSPENDED IMMEDIATELY. THE APPROPRIATE TCEQ REGIONAL OFFICE MUST BE IMMEDIATELY NOTIFIED OF ANY SENSITIVE FEATURES ENCOUNTERED DURING CONSTRUCTION. THE REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MAY NOT PROCEED UNTIL THE TCEQ HAS REVIEWED AND APPROVED THE METHODS PROPOSED TO PROTECT THE SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM ANY POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY.
- NO TEMPORARY ABOVEGROUND HYDROCARBON AND HAZARDOUS SUBSTANCE STORAGE TANK SYSTEM IS INSTALLED WITHIN 150 FEET OF A DOMESTIC, INDUSTRIAL, IRRIGATION, OR PUBLIC WATER SUPPLY WELL, OR OTHER SENSITIVE FEATURE.
- PRIOR TO COMMENCEMENT OF CONSTRUCTION, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY SELECTED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS AND GOOD ENGINEERING PRACTICES. CONTROLS SPECIFIED IN THE TEMPORARY STORM WATER SECTION OF THE APPROVED EDWARDS AQUIFER PROTECTION PLAN ARE REQUIRED DURING CONSTRUCTION. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS. THE CONTROLS MUST REMAIN IN PLACE UNTIL DISTURBED AREAS ARE REVEGETATED AND THE AREAS HAVE BECOME PERMANENTLY STABILIZED.
- IF SEDIMENT ESCAPES THE CONSTRUCTION SITE, OFF-SITE ACCUMULATIONS OF SEDIMENT MUST BE REMOVED AT A FREQUENCY SUFFICIENT TO MINIMIZE OFFSITE IMPACTS TO WATER QUALITY (E.G., FUGITIVE SEDIMENT IN STREET BEING WASHED INTO SURFACE STREAMS OR SENSITIVE FEATURES BY THE NEXT RAIN).
- SEDIMENT MUST BE REMOVED FROM SEDIMENT TRAPS OR SEDIMENTATION PONDS NOT LATER THAN WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50%. A PERMANENT STAKE MUST BE PROVIDED THAT CAN INDICATE WHEN THE SEDIMENT OCCUPIES 50% OF THE BASIN VOLUME.
- LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORMWATER SHALL BE PREVENTED FROM BECOMING A POLLUTANT SOURCE FOR STORMWATER DISCHARGES (E.G., SCREENING OUTFALLS, PICKED UP DAILY).
- ALL SPOILS (EXCAVATED MATERIAL) GENERATED FROM THE PROJECT SITE MUST BE STORED ON-SITE WITH PROPER E&S CONTROLS. FOR STORAGE OR DISPOSAL OF SPOILS AT ANOTHER SITE ON THE EDWARDS AQUIFER RECHARGE ZONE, THE PROJECT SITE MUST RECEIVE APPROVAL OF A WATER POLLUTION ABATEMENT PLAN FOR THE PLACEMENT OF FILL MATERIAL OR MASS GRADING PRIOR TO THE PLACEMENT OF SPOILS AT THE OTHER SITE.
- STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. WHERE THE INITIATION OF STABILIZATION MEASURES BY THE 14TH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASE IS PRECLUDED BY WEATHER CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE. WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE IS TEMPORARILY CEASED, AND EARTH DISTURBING ACTIVITIES WILL BE RESUMED WITHIN 21 DAYS, TEMPORARY STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF SITE. IN AREAS EXPERIENCING DROUGHTS WHERE THE INITIATION OF STABILIZATION MEASURES BY THE 14TH DAY AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED IS PRECLUDED BY SEASONAL ARID CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE.
- THE FOLLOWING RECORDS SHALL BE MAINTAINED AND MADE AVAILABLE TO THE TCEQ UPON REQUEST: THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR; THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE; AND THE DATES WHEN STABILIZATION MEASURES ARE INITIATED.
- THE HOLDER OF ANY APPROVED EDWARDS AQUIFER PROTECTION PLAN MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE IN WRITING AND OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE FOLLOWING:
 - ANY PHYSICAL OR OPERATIONAL MODIFICATION OF ANY WATER POLLUTION ABATEMENT STRUCTURE(S), INCLUDING BUT NOT LIMITED TO PONDS, DAMS, BERMS, SEWAGE TREATMENT PLANTS, AND DIVERSIONARY STRUCTURES;
 - ANY CHANGE IN THE NATURE OR CHARACTER OF THE REGULATED ACTIVITY FROM THAT WHICH WAS ORIGINALLY APPROVED OR A CHANGE WHICH WOULD SIGNIFICANTLY IMPACT THE ABILITY OF THE PLAN TO PREVENT POLLUTION OF THE EDWARDS AQUIFER;
 - ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED AS UNDEVELOPED IN THE ORIGINAL WATER POLLUTION ABATEMENT PLAN.

AUSTIN REGIONAL OFFICE
2800 S. IH 35, SUITE 100
AUSTIN, TEXAS 78704-5712
PHONE (512) 339-2829
FAX (512) 339-3795

SAN ANTONIO REGIONAL OFFICE
14250 JUDSON ROAD
SAN ANTONIO, TEXAS 78233-4480
PHONE (210) 490-3096
FAX (210) 545-4329

THESE GENERAL CONSTRUCTION NOTES MUST BE INCLUDED ON THE CONSTRUCTION PLANS PROVIDED TO THE CONTRACTOR AND ALL SUBCONTRACTORS.

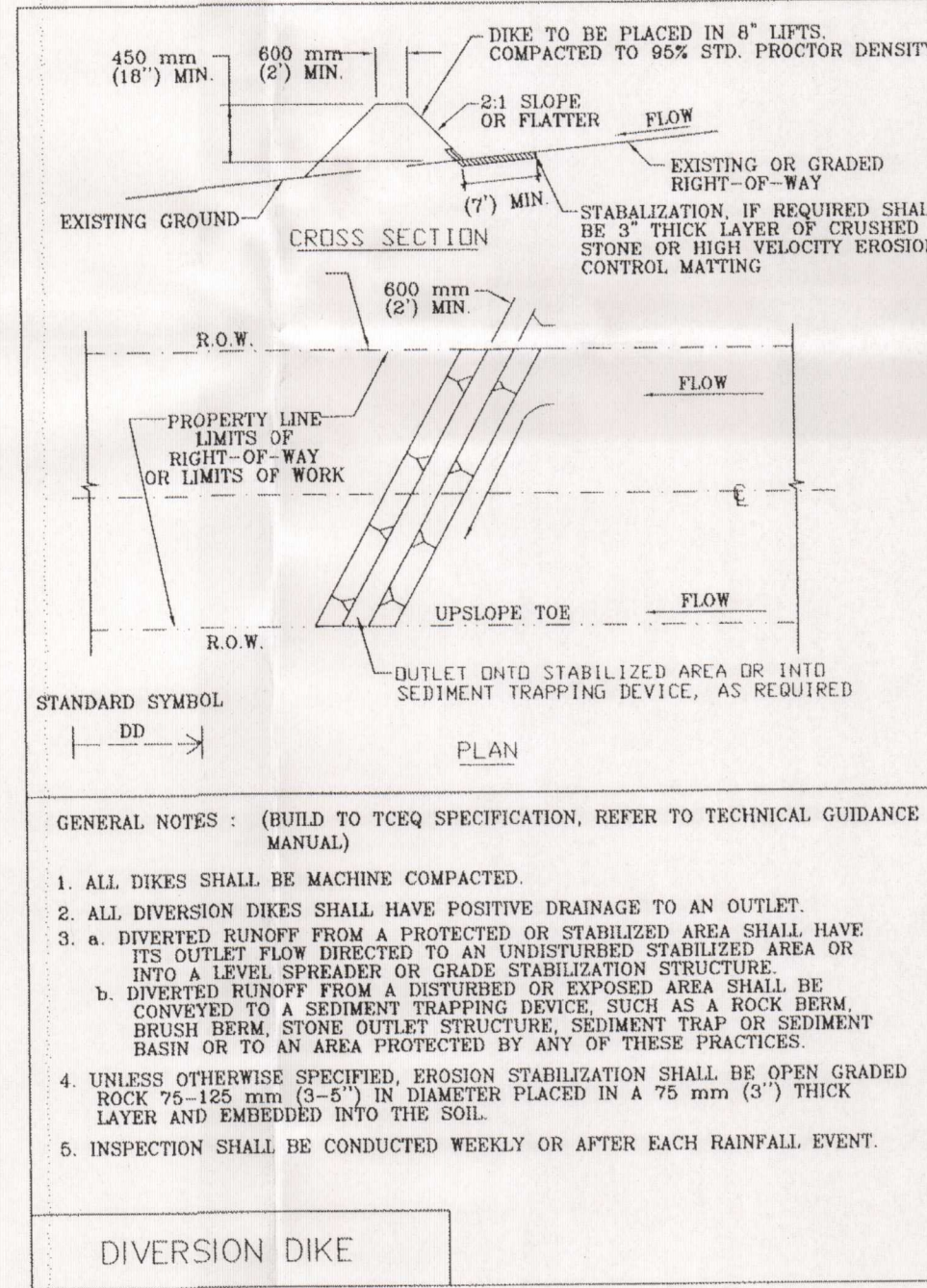
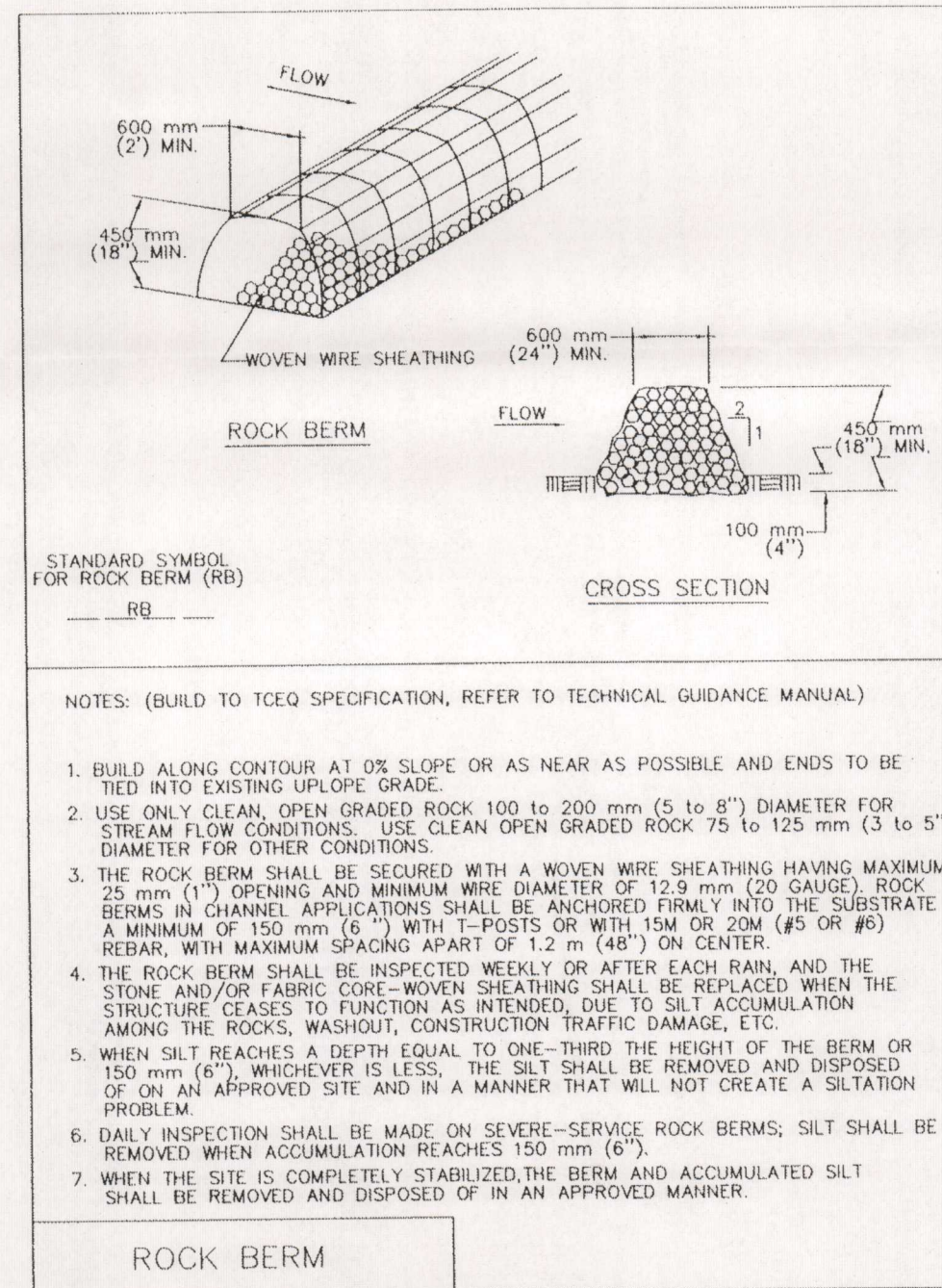
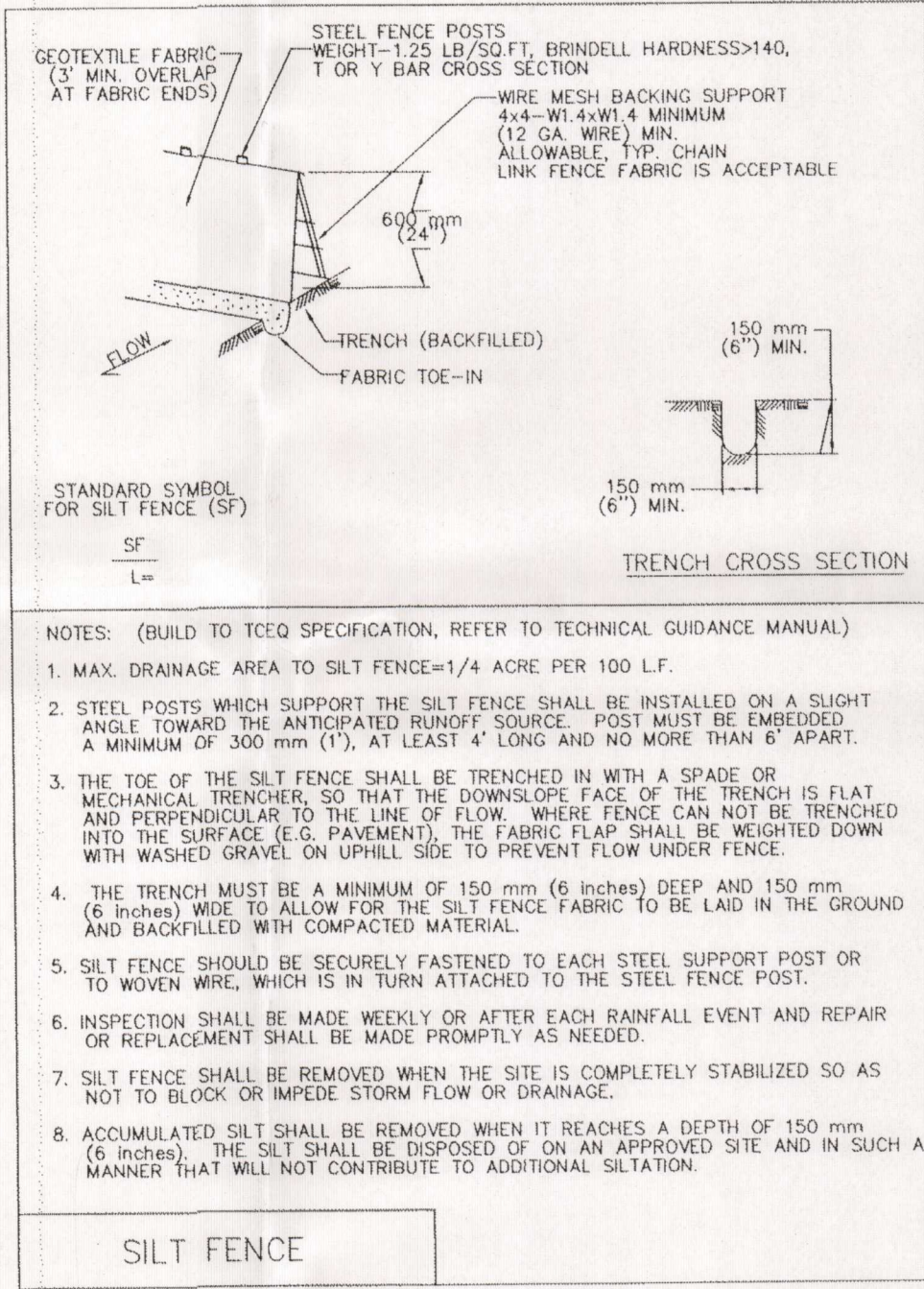
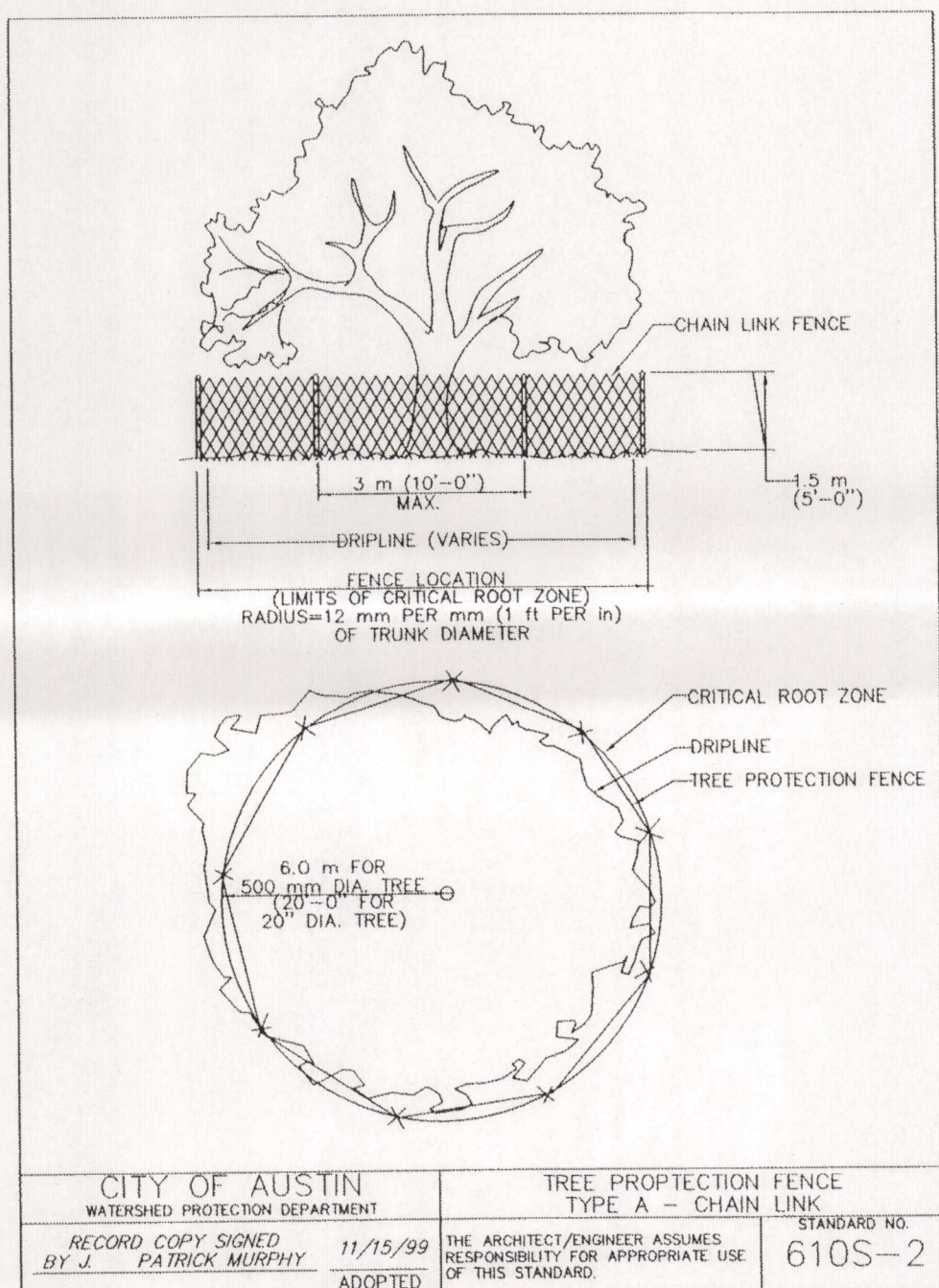
STABILIZATION / REVEGETATION NOTES

- THE CONTRACTOR SHALL INSTALL EROSION/SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTIVE FENCING PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR EXCAVATION).
- THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE TCEQ TECHNICAL GUIDANCE MANUAL AND THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN.
- THE PLACEMENT OF TREE/NATURAL AREA PROTECTIVE FENCING SHALL BE IN ACCORDANCE WITH THE CITY OF AUSTIN STANDARD NOTES FOR TREE AND NATURAL AREA PROTECTION AND THE APPROVED GRADING/TREE AND NATURAL AREA PLAN.
- A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD ON-SITE WITH THE CONTRACTOR, DESIGN ENGINEER/PERMIT APPLICANT AND ENVIRONMENTAL INSPECTOR AFTER INSTALLATION OF THE EROSION/SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTION MEASURES AND PRIOR TO BEGINNING ANY SITE PREPARATION WORK.
- ANY MAJOR VARIATION IN MATERIALS OR LOCATIONS OF CONTROLS OR FENCES FROM THOSE SHOWN ON THE APPROVED PLANS WILL REQUIRE A REVISION AND MUST BE APPROVED BY THE REVIEWING ENGINEER OR ENVIRONMENTAL SPECIALIST. MINOR CHANGES TO BE MADE AS FIELD REVISIONS TO THE EROSION AND SEDIMENTATION CONTROL PLAN MAY BE REQUIRED BY THE ENVIRONMENTAL INSPECTOR DURING THE COURSE OF CONSTRUCTION TO CORRECT CONTROL INADEQUACIES.
- THE CONTRACTOR IS REQUIRED TO INSPECT THE CONTROLS AND FENCES AT WEEKLY INTERVALS AND AFTER SIGNIFICANT RAINFALL EVENTS TO INSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS TO DAMAGED AREAS. SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHES SIX (6) INCHES.
- PRIOR TO FINAL ACCEPTANCE, HAUL ROADS AND WATERWAY CROSSINGS CONSTRUCTED FOR TEMPORARY CONTRACTOR ACCESS MUST BE REMOVED, ACCUMULATED SEDIMENT REMOVED FROM THE WATERWAY AND THE AREA RESTORED TO THE ORIGINAL GRADE AND REVEGETATED. ALL LAND CLEARING DEBRIS SHALL BE DISPOSED OF IN APPROVED SPOIL DISPOSAL SITES.
- ALL WORK MUST STOP IF A VOID IN THE ROCK SUBSTRATE IS DISCOVERED WHICH IS; ONE SQUARE FOOT IN TOTAL AREA; BLOWS AIR FROM WITHIN THE SUBSTRATE AND/OR CONSISTENTLY RECEIVES WATER DURING ANY RAIN EVENT. AT THIS TIME IT IS THE RESPONSIBILITY OF THE PROJECT MANAGER TO IMMEDIATELY CONTACT A TCEQ INSPECTOR FOR FURTHER INVESTIGATION. PERMANENT EROSION CONTROL: ALL DISTURBED AREAS SHALL BE RESTORED AS NOTED BELOW.
 - A MINIMUM OF FOUR INCHES OF TOPSOIL SHALL BE PLACED IN ALL DRAINAGE CHANNELS (EXCEPT ROCK) AND BETWEEN THE CURB AND RIGHT-OF-WAY LINE.
 - RESEEDING SHALL IMMEDIATELY FOLLOW TOP SOILING WITH THE FOLLOWING MIXTURE OF GRASSES AT THE FOLLOWING RATES OF APPLICATION:

	5.0 LBS/ACRE
BLUE GRAMA	5.0 LBS/ACRE
TREATED TOP GUN* BUFFALO GRASS	10.0 LBS/ACRE
TEXAS BLUEBONNETS	4.0 LBS/ACRE
PRAIRIE VERBENAS	0.5 LBS/ACRE
GREENTHREAD	1.0 LBS/ACRE
PLAINS COREOPSIS	0.5 LBS/ACRE
TOTAL SEEDING RATE*	21.0 LBS/ACRE

* PERENNIAL RYE GRASS TO BE ADDED TO THE DESCRIBED MIX AT A RATE OF 10 LBS/ACRE WHEN SEEDING BETWEEN OCTOBER 1 AND MARCH 31.
 - FERTILIZER SHALL BE A PELLETTED OR GRANULAR SLOW RELEASE WITH AN ANALYSIS OF 15-15-15 TO BE APPLIED ONCE AT PLANTING AND ONCE DURING THE PERIOD OF ESTABLISHMENT AT A RATE OF 1 POUND PER 1000 SF
 - FERTILIZER SHALL BE A WATER SOLUBLE FERTILIZER WITH AN ANALYSIS OF 15-5-15 AT A RATE OF 1.5 POUNDS PER 1000 SF.
 - MULCH TYPE USED SHALL BE HAY, STRAW OR MULCH APPLIED AT A RATE OF 6 POUNDS PER 1000 SF, WITH SOIL TACKIFIER AT A RATE OF 1.4 POUNDS PER 1000 SF
 - THE PLANTED AREA SHALL BE IRRIGATED OR SPRINKLED IN A MANNER THAT WILL NOT ERODE THE TOPSOIL, BUT WILL SUFFICIENTLY SOAK THE SOIL TO A DEPTH OF SIX INCHES. THE IRRIGATION SHALL OCCUR AT TEN-DAY INTERVALS DURING THE FIRST TWO MONTHS IN AN EQUAL OCCURRENCES OF ½ INCH OR MORE SHALL POSTPONE THE WATERING SCHEDULE FOR ONE WEEK
 - RESTORATION SHALL BE ACCEPTABLE WHEN THE GRASS HAS GROWN AT LEAST ½ INCHES HIGH WITH 95% COVERAGE, PROVIDED NO BARE SPOTS LARGER THAN 16 SQUARE FEET EXIST.
 - WHEN REQUIRED, NATIVE GRASS SEEDING SHALL COMPLY WITH REQUIREMENTS OF THE CITY OF AUSTIN ENVIRONMENTAL CRITERIA MANUAL.
 - ANNUAL GRASSES SUCH AS RYE GRASS WILL NOT BE ACCEPTED AS PERMANENT VEGETATION
 - ALL DISTURBED AREAS TO BE STABILIZED BY VEGETATION OR STRUCTURE.
 - DEVELOPER INFORMATION:

OWNER: CITY OF U.S.D. 1421 NORTH BUSINESS 35 NEW BRAUNFELS, TEXAS 78130 PHONE: 830-227-2000	OWNER'S REPRESENTATIVE RESPONSIBLE FOR PLAN ALTERATIONS: LOOMIS ENGINEERING, LAND SURVEYING & ENVIRONMENTAL CONSULTING 3103 BEE CAVES ROAD #225 AUSTIN, TEXAS 78746 512-327-1180
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DESIGNED BY: C.K.	DRAWN BY: N.T.	CHECKED BY: C.K.	APPROVED BY: C.K.	DATE: August 8, 2007
JOHNSON RANCH PHASE 1A EROSION/SEDIMENTATION CONTROL NOTES & DETAILS				
SHEET NO. 6				

Water Pollution Abatement Plan Application
for Regulated Activities
on the Edwards Aquifer Recharge Zone
and Relating to 30 TAC §213.5(b), Effective June 1, 1999

REGULATED ENTITY NAME: Johnson Ranch

REGULATED ENTITY INFORMATION

1. The type of project is:
☒ Residential: # of Lots: 12
☐ Residential: # of Living Unit Equivalents:
☐ Commercial
☐ Industrial
☐ Other: _____
2. Total site acreage (size of property): 751.3 acres
3. Projected population: 36 persons
4. The amount and type of impervious cover expected after construction are shown below:

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	33,000	÷ 43,560 =	0.76
Parking	0	÷ 43,560 =	0
Other paved surfaces	160,592	÷ 43,560 =	3.69
Total Impervious Cover	190,592	÷ 43,560 =	4.44
Total Impervious Cover ÷ Total Acreage x 100 =			0.53 %

5. ☒ **ATTACHMENT A - Factors Affecting Water Quality.** A description of any factors that could affect surface water and groundwater quality is provided ~~at the end of this form~~ below.

Potential sources of pollution that may be expected to affect the quality of stormwater discharges from the construction site include:

- Soil erosion due to the clearing of the site for roads, buildings, and drainage structures.
- Oil, grease, fuel, and hydraulic fluid contamination from construction equipment and vehicle drippings.
- Hydrocarbons from asphalt paving operations.
- Miscellaneous trash and litter from construction workers and material wrappings.
- Construction debris.

- Concrete truck washout.

6. ☒ Only inert materials as defined by 30 TAC §330.2 will be used as fill material.

FOR ROAD PROJECTS ONLY – This is not a road project

Complete questions 7-12 if this application is exclusively for a road project.

7. Type of project:

- ☐ TXDOT road project.
- ☐ County road or roads built to county specifications.
- ☐ City thoroughfare or roads to be dedicated to a municipality.
- ☐ Street or road providing access to private driveways.

8. Type of pavement or road surface to be used:

- ☐ Concrete
- ☐ Asphaltic concrete pavement
- ☐ Other:

9. Length of Right of Way (R.O.W.): _____ feet.
 Width of R.O.W.: _____ feet.
 $L \times W = \text{_____ Ft}^2 \div 43,560 \text{ Ft}^2/\text{Acre} = \text{_____ acres.}$

10. Length of pavement area: _____ feet.
 Width of pavement area: _____ feet.
 $L \times W = \text{_____ Ft}^2 \div 43,560 \text{ Ft}^2/\text{Acre} = \text{_____ acres.}$
 Pavement area _____ acres \div R.O.W. area _____ acres $\times 100 = \text{_____ \%}$ impervious cover.

11. ☐ A rest stop will be included in this project.
☐ A rest stop will **not** be included in this project.

12. ☐ Maintenance and repair of existing roadways that do not require approval from the TCEQ Executive Director. Modifications to existing roadways such as widening roads/adding shoulders totaling more than one-half (1/2) the width of one (1) existing lane require prior approval from the TCEQ.

STORMWATER TO BE GENERATED BY THE PROPOSED PROJECT

13. **ATTACHMENT B - Volume and Character of Stormwater.** A description of the volume and character (quality) of the stormwater runoff which is expected to occur from the proposed project is provided ~~at the end of this form~~ **below**. The estimates of stormwater runoff quality and quantity should be based on area and type of impervious cover. Include the runoff coefficient of the site for both pre-construction and post-construction conditions.

Stormwater runoff will increase as a result of this development. For a 25 year storm event, the overall project will generate runoff approximating 106.7 cfs. The runoff coefficient for the site changes from approximately 0.44 before development to approximately 0.55 after development. Values are based on the Rational Method using runoff coefficients as the TxDOT Hydraulic Design Manual - Comal County

WASTEWATER TO BE GENERATED BY THE PROPOSED PROJECT

14. The character and volume of wastewater is shown below:

<u>100</u> % Domestic	<u>3,300</u> gallons/day
<u> </u> % Industrial	<u> </u> gallons/day
<u> </u> % Commingled	<u> </u> gallons/day
TOTAL	<u>3,300</u> gallons/day

15. Wastewater will be disposed of by:

 On-Site Sewage Facility (OSSF/Septic Tank):

ATTACHMENT C - Suitability Letter from Authorized Agent. An on-site sewage facility will be used to treat and dispose of the wastewater. The appropriate licensing authority's (authorized agent) written approval is provided at the end of this form. It states that the land is suitable for the use of an on-site sewage facility or identifies areas that are not suitable.

 Each lot in this project/development is at least one (1) acre (43,560 square feet) in size. The system will be designed by a licensed professional engineer or registered sanitarian and installed by a licensed installer in compliance with 30 TAC Chapter 285.

✓ Sewage Collection System (Sewer Lines):

 Private service laterals from the wastewater generating facilities will be connected to an existing SCS.

✓ Private service laterals from the wastewater generating facilities will be connected to a proposed SCS.

 The SCS was previously submitted on .

 The SCS was submitted with this application.

✓ The SCS will be submitted at a later date. The owner is aware that the SCS may not be installed prior to executive director approval.

The sewage collection system will convey the wastewater to the (name) Treatment Plant. The treatment facility is : Comal County WCID #1
 existing.

✓ proposed.

16. ✓ All private service laterals will be inspected as required in 30 TAC §213.5.

SITE PLAN REQUIREMENTS

Items 17 through 27 must be included on the Site Plan.

17. The Site Plan must have a minimum scale of 1" = 400'.

Site Plan Scale: 1" = 200 '.

18. 100-year floodplain boundaries

✓ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.

 No part of the project site is located within the 100-year floodplain.

The 100-year floodplain boundaries are based on the following specific (including date of material)

19. ☒ The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. Show lots, recreation centers, buildings, roads, etc.
☐ The layout of the development is shown with existing contours. Finished topographic contours will not differ from the existing topographic configuration and are not shown.
20. All known wells (oil, water, unplugged, capped and/or abandoned, test holes, etc.):
☒ There are 1 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply)
☐ The wells are not in use and have been properly abandoned.
☐ The wells are not in use and will be properly abandoned.
☒ The wells are in use and comply with 30 TAC §238.
☐ There are no wells or test holes of any kind known to exist on the project site.
21. Geologic or manmade features which are on the site:
☐ All **sensitive and possibly sensitive** geologic or manmade features identified in the Geologic Assessment are shown and labeled.
☒ No **sensitive and possibly sensitive** geologic or manmade features were identified in the Geologic Assessment.
N/A **ATTACHMENT D - Exception to the Required Geologic Assessment.** An exception to the Geologic Assessment requirement is requested and explained in ATTACHMENT D provided at the end of this form. Geologic or manmade features were found and are shown and labeled.
N/A **ATTACHMENT D - Exception to the Required Geologic Assessment.** An exception to the Geologic Assessment requirement is requested and explained in ATTACHMENT D provided at the end of this form. No geologic or manmade features were found.
22. ☒ The drainage patterns and approximate slopes anticipated after major grading activities.
23. ☒ Areas of soil disturbance and areas which will not be disturbed.
24. ☒ Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.
25. ☒ Locations where soil stabilization practices are expected to occur.
26. ☒ Surface waters (including wetlands).
27. ☒ Locations where stormwater discharges to surface water or sensitive features.
☐ There will be no discharges to surface water or sensitive features.

ADMINISTRATIVE INFORMATION

28. ☒ One (1) original and three (3) copies of the completed application have been provided.
29. ☒ Any modification of this WPAP will require TCEQ executive director approval, prior to construction, and may require submission of a revised application, with appropriate fees.

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **WATER POLLUTION ABATEMENT PLAN APPLICATION FORM** is hereby submitted for TCEQ review and executive director approval. The form was prepared by:

Print Name of Customer/Agent

Chad W. Kyle

Signature of Customer/Agent

8/9/07

Date

Temporary Stormwater Section
for Regulated Activities
on the Edwards Aquifer Recharge Zone
and Relating to 30 TAC §213.5(b)(4)(A), (B), (D)(I) and (G); Effective June 1, 1999

REGULATED ENTITY NAME: Johnson Ranch

POTENTIAL SOURCES OF CONTAMINATION

Examples: Fuel storage and use, chemical storage and use, use of asphaltic products, construction vehicles tracking onto public roads, and existing solid waste.

1. Fuels for construction equipment and hazardous substances which will be used during construction:
 - ☐ Aboveground storage tanks with a cumulative storage capacity of less than 250 gallons will be stored on the site for less than one (1) year.
 - ☐ Aboveground storage tanks with a cumulative storage capacity between 250 gallons and 499 gallons will be stored on the site for less than one (1) year.
 - ☐ Aboveground storage tanks with a cumulative storage capacity of 500 gallons or more will be stored on the site. An **Aboveground Storage Tank Facility Plan** application must be submitted to the appropriate regional office of the TCEQ prior to moving the tanks onto the project.
 - ☒ Fuels and hazardous substances will not be stored on-site.
2. ☒ **ATTACHMENT A - Spill Response Actions.** A description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is provided at the end of this form.
3. ☒ Temporary aboveground storage tank systems of 250 gallons or more cumulative storage capacity must be located a minimum horizontal distance of 150 feet from any domestic, industrial, irrigation, or public water supply well, or other sensitive feature.
4. ☒ **ATTACHMENT B - Potential Sources of Contamination.** Describe **below** in an attachment at the end of this form any other activities or processes which may be a potential source of contamination.
 - ☐ There are no other potential sources of contamination.

Other potential sources of contamination during construction include:

- a) **Potential Source:** Asphalt products used on this project
Preventive Measure: After placement of asphalt, emulsion or coatings, the contractor will be responsible for immediate cleanup should an unexpected rain occur. For the duration of the asphalt curing time, the contractor will maintain standby personnel and equipment to contain any asphalt wash-off should an unexpected rain occur. The contractor will be instructed not to place asphalt products on the ground within 48 hours of a forecasted rain.

- b) Potential Source: Oil grease, fuel and hydraulic fluid contamination from construction equipment and vehicle dripping
Preventive Measure: Vehicle maintenance when possible will be performed within the construction staging area.
- c) Potential Source: Miscellaneous trash and litter from construction workers and material wrapping
Preventive Measure: Trash containers will be placed throughout the site to encourage proper trash disposal.
- d) Potential Source: Construction Debris
Preventive Measure: Construction debris will be monitored daily by contractor. Debris will be collected weekly and placed in disposal bins. Situations requiring immediate attention will be addressed on a case by case basis.

SEQUENCE OF CONSTRUCTION

5. √ **ATTACHMENT C - Sequence of Major Activities.** A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is provided ~~at the end of this form~~ **below**. For each activity described, an estimate of the total area of the site to be disturbed by each activity is given.

The sequence of major activities which disturb soil during construction on this site will be divided into 2 stages. The first is site preparation that will include clearing and grubbing of vegetation and removal of existing pavement where applicable. This will disturb approximately 10.1 acres. The second is construction that will include construction of buildings, construction of new pavement areas, landscaping and site cleanup. This will disturb approximately 3.0 acres

6. √ Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: Cibolo Creek

TEMPORARY BEST MANAGEMENT PRACTICES (TBMPs)

Erosion control examples: tree protection, interceptor swales, level spreaders, outlet stabilization, blankets or matting, mulch, and sod. Sediment control examples: stabilized construction exit, silt fence, filter dikes, rock berms, buffer strips, sediment traps, and sediment basins. Please refer to the Technical Guidance Manual for guidelines and specifications. **All structural BMPs must be shown on the site plan.**

7. √ **ATTACHMENT D - Temporary Best Management Practices and Measures.** A description of the TBMPs and measures that will be used during and after construction are provided ~~at the end of this form~~ **below**. For each activity listed in the sequence of construction, include appropriate control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

√ TBMPs and measures will prevent pollution of surface water, groundwater, and stormwater. The construction-phase BMPs for erosion and sediment controls have been designed to retain sediment on site to the extent practicable. The following information has been provided ~~in the attachment at the end of this form~~ **below**.

- a. A description of how BMPs and measures will prevent pollution of surface water, groundwater or stormwater that originates upgradient from the site and flows across the site.

Upgradient water will be intercepted through channels along the northwest side of the property and directed to a Cibolo Creek tributary. Silt fences and rock berms will be placed along the channel. Diversion dikes will be used to redirect the upgradient flows from north of the disturbed areas to the tributary of Cibolo Creek running down the east side of the site.

- b. A description of how BMPs and measures will prevent pollution of surface water or groundwater that originates on-site or flows off site, including pollution caused by contaminated stormwater runoff from the site.

Site preparation: The initiation of all activity on the project will disturb the largest amount of soil. Therefore, before any of this work can begin, the clearing and grading contractor will be responsible for the installation of all on-site control measures. The methodology for pollution prevention of all on-site stormwater will include: (1) erection of silt-fences along the downgradient boundary of the construction activities for temporary erosion and sedimentation controls, (2) installation of rock berms with silt fencing downgradient from areas of concentrated stormwater flow for temporary erosion control, (3) installation of stabilized construction entrance/exit(s) to reduce the dispersion of sediment from the site, and (4) installation of construction staging areas.

Construction: Prior to the initiation of construction, all previously installed control measures will be repaired or reestablished for their designed or intended purpose. The construction contractor will be responsible for the installation of all remaining on-site control measures that includes installation of the concrete truck washout pit(s), as construction phasing warrants.

- c. A description of how BMPs and measures will prevent pollutants from entering surface streams, sensitive features, or the aquifer.

Temporary measures are intended to provide a method of slowing the flow of runoff from the construction site in order to allow sediment and suspended solids to settle out of the runoff. By containing the sediment and solids within the site, they will not enter surface streams and/or sensitive features.

- d. A description of how, to the maximum extent practicable, BMPs and measures will maintain flow to naturally-occurring sensitive features identified in either the geologic assessment, TCEQ inspections, or during excavation, blasting, or construction.

BMP measures utilized in this plan are intended to allow stormwater to continue

downstream after passing through the BMP's. This will allow stormwater runoff to continue downgradient to streams or features that may exist downstream of the site.

8. The temporary sealing of a naturally-occurring sensitive feature which accepts recharge to the Edwards Aquifer as a temporary pollution abatement measure during active construction should be avoided.

N/A **ATTACHMENT E - Request to Temporarily Seal a Feature.** A request to temporarily seal a feature is provided at the end of this form. The request includes justification as to why no reasonable and practicable alternative exists for each feature.

√ There will be no temporary sealing of naturally-occurring sensitive features on the site.

9. √ **ATTACHMENT F - Structural Practices.** Describe the structural practices that will be used to divert flows away from exposed soils, to store flows, or to otherwise limit runoff discharge of pollutants from exposed areas of the site. Placement of structural practices in floodplains has been avoided.

The following structural measures will be installed prior to the initiation of site preparation activities:

- Erection of silt fences along the downgradient boundary of construction activities and rock berms with silt fence for secondary protection.
- Installation of stabilized construction entrance/exit(s) and construction staging area(s).
- Installation of concrete truck washout pit(s), as required.

10. √ **ATTACHMENT G - Drainage Area Map.** A drainage area map is provided at the end of this form (Sheet # 4) to support the following requirements.

— For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin will be provided.

— For areas that will have more than 10 acres within a common drainage area disturbed at one time, a smaller sediment basin and/or sediment trap(s) will be used.

— For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin or other equivalent controls are not attainable, but other TBMPs and measures will be used in combination to protect down slope and side slope boundaries of the construction area.

√ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area.

11. N/A **ATTACHMENT H - Temporary Sediment Pond(s) Plans and Calculations.** Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure has been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information must be signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed temporary BMPs and measures are provided as at the end of this form.

12. √ **ATTACHMENT I - Inspection and Maintenance for BMPs.** A plan for the inspection of temporary BMPs and measures and for their timely maintenance, repair, and, if necessary, retrofit is provided at the end of this form. A description of documentation procedures and recordkeeping practices is included in the plan.
13. √ All control measures must be properly selected, installed, and maintained in accordance with the manufacturers specifications and good engineering practices. If periodic inspections by the applicant or the executive director, or other information indicates a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations.
14. √ If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain).
15. N/A Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50%. A permanent stake will be provided that can indicate when the sediment occupies 50% of the basin volume.
16. √ Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).

SOIL STABILIZATION PRACTICES

Examples: establishment of temporary vegetation, establishment of permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, or preservation of mature vegetation.

17. √ **ATTACHMENT J - Schedule of Interim and Permanent Soil Stabilization Practices.** A schedule of the interim and permanent soil stabilization practices for the site is ~~attached at the end of this form~~ **below**.

Interim on-site stabilization measures, which are continuous, will include minimizing soil disturbances by exposing only the smallest practical area of land required for the shortest period of time and maximizing use of natural vegetation. As soon as practical, all disturbed soil will be stabilized as per project specifications in accordance with pages 1-35 to 1-60 of the TCEQ's Technical Guidance Manual (TGM) RG-348 (2005). Mulching, netting, erosion blankets, and seeding are acceptable.

Stabilization measures will be initiated as soon as practicable in portions of the site where construction activities have temporary or permanent ceased, and except as provided below, will be initiated no more than fourteen (14) days after the construction activity in that portion of the site has temporary or permanently ceased. Where the construction activity on a portion of the site is temporary ceased, and the earth disturbing activities will be resumed within twenty-one (21) days, temporary stabilization measures do not have to be initiated on that portion of the site. In areas experiencing droughts where the initiation of stabilization measures by the 14th day

after construction activity has temporary or permanently ceased is precluded by seasonably arid condition, stabilization measures must be initiated as soon as practicable.

18. √ Records must be kept at the site of the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
19. √ Stabilization practices must be initiated as soon as practicable where construction activities have temporarily or permanently ceased.

ADMINISTRATIVE INFORMATION

20. √ All structural controls will be inspected and maintained according to the submitted and approved operation and maintenance plan for the project.
21. √ If any geologic or manmade features, such as caves, faults, sinkholes, etc., are discovered, all regulated activities near the feature will be immediately suspended. The appropriate TCEQ Regional Office shall be immediately notified. Regulated activities must cease and not continue until the TCEQ has reviewed and approved the methods proposed to protect the aquifer from any adverse impacts.
22. √ Silt fences, diversion berms, and other temporary erosion and sediment controls will be constructed and maintained as appropriate to prevent pollutants from entering sensitive features discovered during construction.

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **TEMPORARY STORMWATER SECTION** is hereby submitted for TCEQ review and executive director approval. The application was prepared by:

Print Name of Customer/Agent


Signature of Customer/Agent

8/9/07
Date

Spill Prevention and Control

The objective of this section is to describe measures to prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

The following steps will help reduce the stormwater impacts of leaks and spills:

Education

- (1) Be aware that different materials pollute in different amounts. Make sure that each employee knows what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills. Employees should also be aware of when spill must be reported to the TCEQ. Information available in 30 TAC 327.4 and 40 CFR 302.4.
- (2) Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.
- (3) Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).
- (4) Establish a continuing education program to indoctrinate new employees.
- (5) Have a contractor's superintendent or representative oversee and enforce proper spill prevention and control measures.

General Measures

- (1) To the extent that the work can be accomplished safely, spills of oil, petroleum, products, substances listed under 40 CFR parts 110,117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.
- (2) Store hazardous materials and wastes in covered containers and protect from vandalism.
- (3) Place a stockpile of spill cleanup materials where it will be readily accessible.
- (4) Train employees in spill prevention and cleanup.
- (5) Designate responsible individuals to oversee and enforce control measures.
- (6) Spills should be covered and protected from stormwater runoff during rainfall to the extent that it doesn't compromise clean up activities.
- (7) Do not bury or wash spills with water.
- (8) Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMP's.

- (9) Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with applicable regulations.
- (10) Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.
- (11) Place Material Safety Data Sheets (MSDS), as well as proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.
- (12) Keep waste storage areas clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.

Cleanup

- (1) Clean up leaks and spills immediately
- (2) Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be disposed of as hazardous waste.
- (3) Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly. See the waste management BMPs in this section for specific information.

Minor Spills

- (1) Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.
- (2) Use absorbent materials on small spills rather than hosing down or burying the spill.
- (3) Absorbent materials should be promptly removed and disposed of properly.
- (4) Follow the practice below for a minor spill:
- (5) Contain the spread of the spill
- (6) Recover spilled materials
- (7) Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills

Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.

Spills should be cleaned up immediately:

- (1) Contain spread of the spill
- (2) Notify the project foreman immediately
- (3) If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.
- (4) If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
- (5) If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Significant/Hazardous Spills

- (1) Notify the TCEQ by telephone as soon as possible and within 24 hours at 512-339-2929 (Austin) or 210-490-3096 (San Antonio) between 8 AM and 5 PM. After hours, contact the Environmental Release Hotline at 1-800-832-8224. It is the contractor's responsibility to have all emergency phone numbers at the construction site.
- (2) For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110, 119, and 302, the contractor should notify the National Response Center at (800) 424-8802.
- (3) Notification should first be made by telephone and followed up with a written report.
- (4) The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.
- (5) Other agencies which may need to be consulted include, but are not limited to, the City Police Department, County Sheriff Office, Fire Departments, etc.

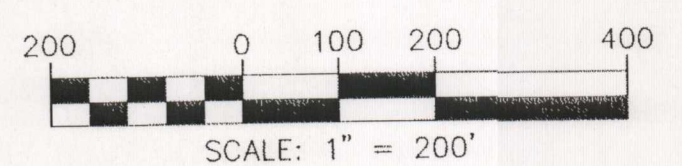
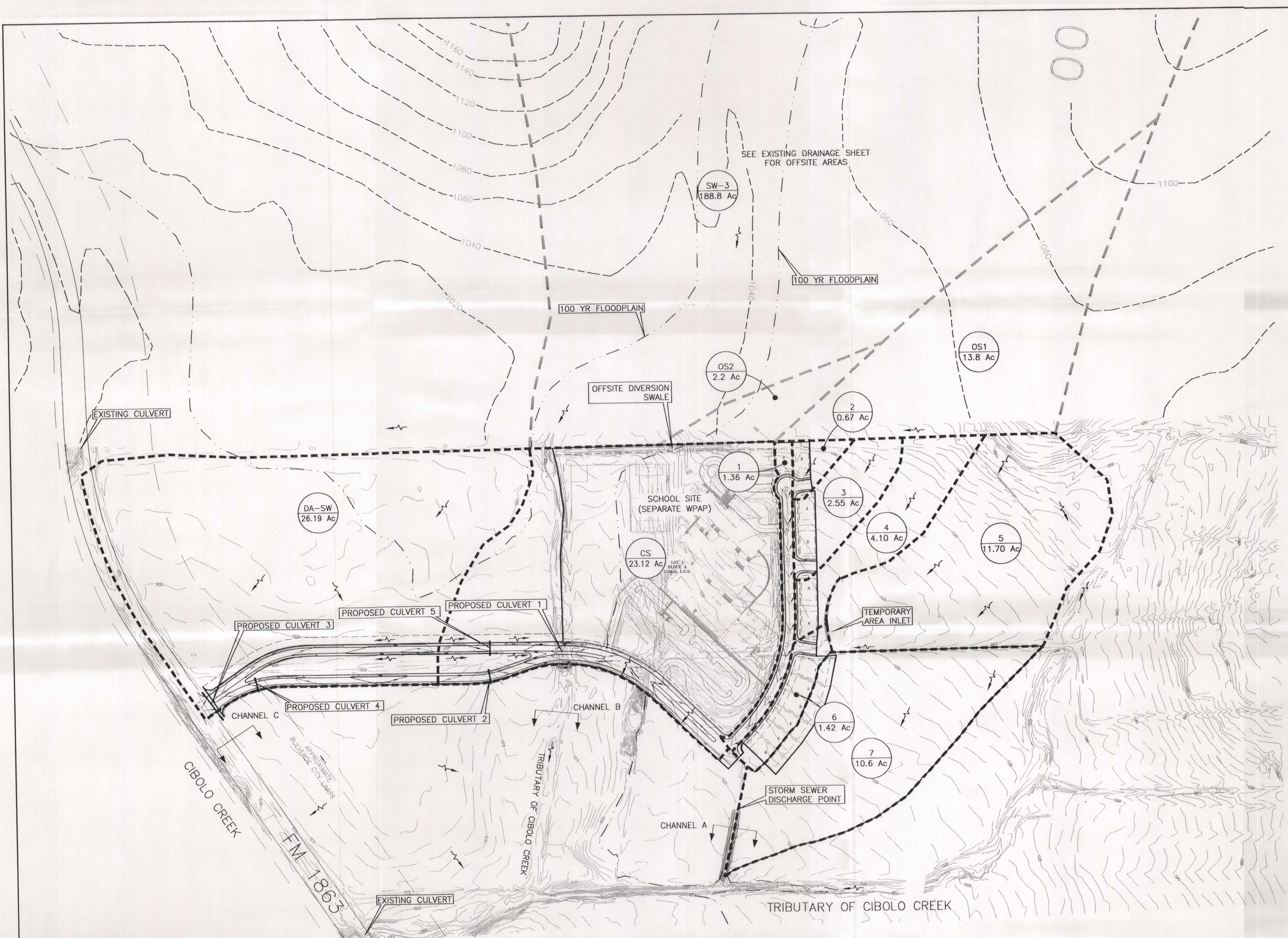
More information on spill rules and appropriate responses is available on the TCEQ website at : http://www.tnrc.state.tx.us/enforcement/emergency_response.html

Vehicle and Equipment Maintenance

- (1) If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the runoff of stormwater and the runoff of spills.
- (2) Regularly inspect onsite vehicles and equipment for leaks and repair immediately.
- (3) Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.
- (4) Always use secondary containment, such as drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
- (5) Place drip pans or absorbent materials under paving equipment when not in use.
- (6) Use absorbent materials on small spills rather than hosing down or burying the spill. Remove the absorbent materials promptly and dispose of properly.
- (7) Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.
- (8) Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place the oil filter in a funnel over the waste oil-recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask the oil supplier or recycler about recycling oil filters.
- (9) Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries even if you think all of the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Vehicle and Equipment Fueling

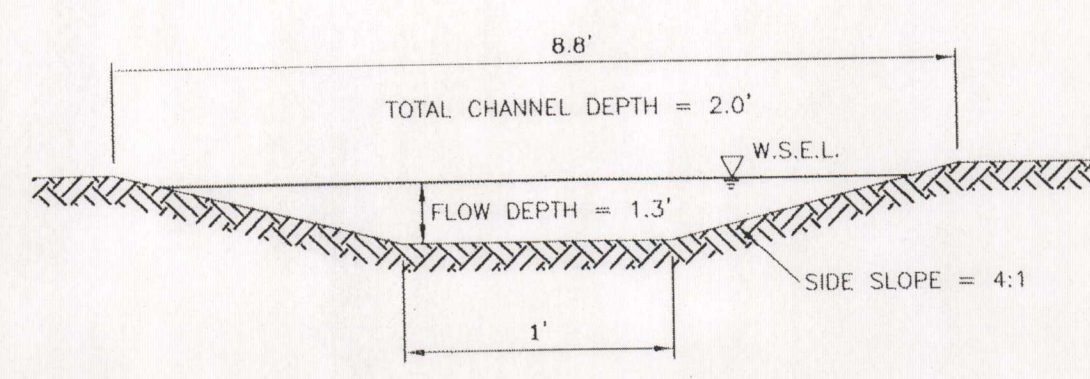
- (1) If fueling must occur on site, use designated areas, located away from drainage courses, to prevent the runoff of stormwater and the runoff of spills.
- (2) Discourage "topping off" of fuel tanks.
- (3) Always use secondary containment, such as a drain pan, when fueling to catch spills/ leaks.



- LEGEND**
- BOUNDARY LINE
 - PROPOSED R.O.W.
 - LOT LINE
 - EASEMENT LINE
 - BUILDING LINE
 - CURB AND GUTTER
 - DRAINAGE AREA
 - EXISTING 1 ft CONTOUR
 - EXISTING 5 ft CONTOUR
 - PROPOSED 1 ft CONTOUR
 - PROPOSED 5 ft CONTOUR
 - RUNOFF FLOW ARROW
 - DRAINAGE AREA IDENTIFIER
 - STORM SEWER DISCHARGE
 - HEADWALL
 - PROPOSED SS INLET
 - HIGH POINT
 - LOW POINT
 - TREE TO BE PRESERVED
 - TREE TO BE REMOVED

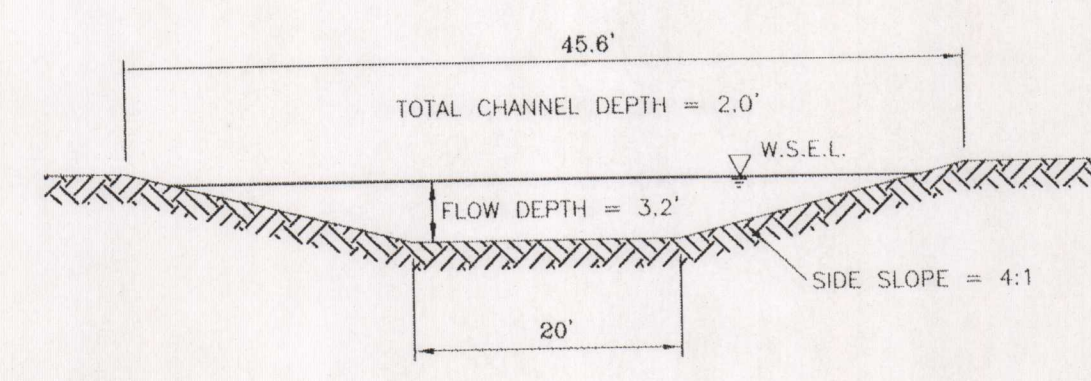
- NOTE:**
- 100YR. FLOODPLAIN FROM FEMA FIRM PANEL 485463-0055D (JULY 17, 1995).
 - TEMPORARY E-S CONTROLS DESIGNED PER TCEQ REQUIREMENTS. TEMPORARY DIVERSION METHODS SHOWN ON SHEET 5 THAT TEMPORARILY MODIFY PROPOSED OFFSITE DRAINAGE AREAS SHOWN ON THIS SHEET.
- AREAS DA-1 THROUGH DA-6 ARE TO BE CAPTURED AND CONVEYED BY PROPOSED STORM SEWER SYSTEM.

DRAINAGE CHANNEL DATA:
 BOTTOM WIDTH = 1 ft
 SIDE SLOPES = 3:1
 MANNING'S n = 0.03
 CHANNEL SLOPE = 0.01
 DEPTH = 1.3 ft
 DISCHARGE(100) = 30.0 cfs
 VELOCITY = 4.6 fps
 FLOW AREA = 6.51 sf
 FROUDE NUMBER = 0.95



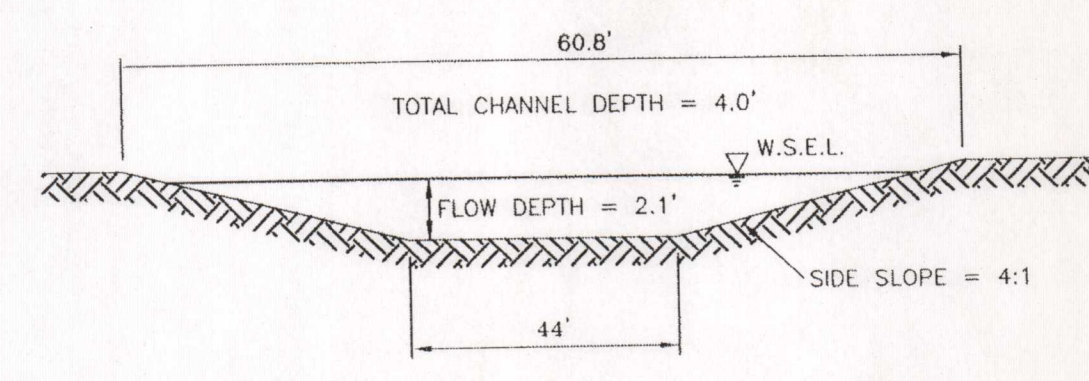
TYPICAL CROSS SECTION CHANNEL C
N.T.S.

DRAINAGE CHANNEL DATA:
 BOTTOM WIDTH = 20 ft
 SIDE SLOPES = 10:1
 MANNING'S n = 0.03
 CHANNEL SLOPE = 0.01
 DEPTH = 3.2 ft
 DISCHARGE(100) = 900.0 cfs
 VELOCITY = 4.58 fps
 FLOW AREA = 220.3 sf
 FROUDE NUMBER = 0.89



TYPICAL CROSS SECTION CHANNEL B
N.T.S.

DRAINAGE CHANNEL DATA:
 BOTTOM WIDTH = 44 ft
 SIDE SLOPES = 4:1
 MANNING'S n = 0.03
 CHANNEL SLOPE = 0.01
 DEPTH = 2.1 ft
 DISCHARGE(100) = 130.0 cfs
 VELOCITY = 5.82 fps
 FLOW AREA = 22.34 sf
 FROUDE NUMBER = 0.89



TYPICAL CROSS SECTION CHANNEL A
N.T.S.

JOHNSON RANCH PHASE 1A DRAINAGE - PEAK FLOW CALCULATION PROPOSED CONDITIONS												
	OS1	OS2	CS	1	2	3	4	5	6	7	SW	
Drainage area (Ac.)	13.8	2.2	21.8	1.36	0.67	2.55	4.1	11.7	1.42	10.6	26.19	
Impervious cover	35%	20%	24%	74%	21%	9%	3%	1%	35%	1%	7%	
Tc	19.70	18.85	14.26	12.13	17.72	19.91	23.12	20.45	9.44	17.88	41.44	
IMPERVIOUS "C" VALUES*												
5-year	0.42	0.42	0.50	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
10-year	0.42	0.42	0.50	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
25-year	0.42	0.42	0.50	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
50-year	0.42	0.42	0.50	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
100-year	0.97	0.42	0.50	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
PERVIOUS "C" VALUES*												
5-year	0.42	0.42	0.46	0.46	0.42	0.42	0.42	0.42	0.42	0.42	0.25	
10-year	0.42	0.42	0.46	0.46	0.42	0.42	0.42	0.42	0.42	0.42	0.25	
25-year	0.42	0.42	0.46	0.46	0.42	0.42	0.42	0.42	0.42	0.42	0.25	
50-year	0.42	0.42	0.46	0.46	0.42	0.42	0.42	0.42	0.42	0.42	0.25	
100-year	0.42	0.42	0.46	0.46	0.42	0.42	0.42	0.42	0.42	0.42	0.25	
COMPOSITE "C" VALUES												
5-year	0.42	0.42	0.47	0.84	0.53	0.47	0.44	0.42	0.61	0.43	0.30	
10-year	0.42	0.42	0.47	0.84	0.53	0.47	0.44	0.42	0.61	0.43	0.30	
25-year	0.42	0.42	0.47	0.84	0.53	0.47	0.44	0.42	0.61	0.43	0.30	
50-year	0.42	0.42	0.47	0.84	0.53	0.47	0.44	0.42	0.61	0.43	0.30	
100-year	0.61	0.42	0.47	0.84	0.53	0.47	0.44	0.42	0.61	0.43	0.30	
RAINFALL INTENSITIES (in./hr)**												
5-year	5.07	5.19	5.99	6.47	5.36	5.04	4.64	4.97	7.21	5.34	3.25	
10-year	5.85	5.99	6.90	7.44	6.18	5.81	5.35	5.73	8.29	6.16	3.76	
25-year	6.72	6.88	7.91	8.53	7.10	6.68	6.16	6.59	9.49	7.07	4.34	
50-year	7.34	7.51	8.62	9.28	7.75	7.30	6.74	7.20	10.31	7.72	4.78	
100-year	8.38	8.57	9.86	10.63	8.85	8.33	7.68	8.21	11.82	8.81	5.43	
PEAK RUNOFF RATES (cfs)												
5-year	29.4	4.8	61.3	7.4	1.9	6.0	8.3	24.7	6.3	24.1	25.7	
10-year	33.9	5.5	70.6	8.5	2.2	6.9	9.6	28.5	7.2	27.8	29.8	
25-year	39.0	6.4	81.0	9.7	2.5	8.0	11.1	32.7	8.3	31.9	34.4	
50-year	42.6	6.9	88.3	10.6	2.8	8.7	12.1	35.8	9.0	34.8	37.9	
100-year	70.8	7.9	100.9	12.1	3.2	9.9	13.8	40.8	10.3	39.8	43.0	

** The runoff coefficients (C) are taken from the TR55
 ** The coefficients c and d for the Rainfall Intensity-Duration Frequency Curve taken from TxDOT Hydraulic Design Manual - Comal County

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**JOHNSON RANCH PHASE 1A
 PROPOSED CONDITIONS
 DRAINAGE PLAN**

Inspections

Designated and qualified person(s) shall inspect Pollution Control Measures every seven days and within 24 hours after a storm event greater than 0.5 inches of rainfall. An inspection report that summarizes the scope of the inspection, names and qualifications of personnel conducting the inspection, date of the inspection, major observations, and actions taken as a result of the inspection shall be recorded and maintained as part of the Storm Water TPDES data for a period of three years after the date of the inspection. A copy of the Inspection Report Form is provided in this Storm Water Pollution Prevention Plan.

As a minimum, the inspector shall observe: (1) significant disturbed areas for evidence of erosion, (2) storage areas for evidence of leakage from the exposed stored materials, (3) structural controls (rock berm outlets, silt fences, drainage swales, etc.) for evidence of failure or excess siltation (over 6 inches deep), (4) vehicle exit point for evidence of off-site sediment tracking, (5) vehicle storage areas for signs of leaking equipment or spills, and (6) concrete truck rinse-out pit for signs of potential failure. Deficiencies noted during the inspection will be corrected and documented within seven (7) calendar days following the inspection or before the next anticipated storm event if practicable.

Pollution Prevention Measure	Inspected	Corrective Action	
		Description	Date Completed
General			
Revegetation			
Erosion/sediment controls			
Vehicle exits			
Material areas			
Equipment Areas			
Concrete rinse			
Construction Debris			
Trash receptacles			
Infrastructure			
Roadway clearing			
Utility clearing			
Roadway grading			
Utility construction			
Drainage construction			
Roadway base			
Roadway surfaces			
Site cleanups			
Building			
Clearing for building			
Foundation grading			
Utility construction			
Foundation construction			
Building construction			
Site grading			
Site cleanup			

**Indicate N/A where measure does not apply*

By my signature below, I certify that all terms are acceptable and the project site is in compliance with SWPPP.

Inspector's Name

Inspector's Signature

Name of Owner/Operator (Firm)

Date

Note: Inspector is to attach a brief statement of his qualifications to this report.

PROJECT MILESTONE DATES

Date when major site grading activities begin:

<u>Construction Activity</u>	<u>Date</u>

Dates when construction activities temporarily or permanently cease on all or a portion of the project:

<u>Construction Activity</u>	<u>Date</u>

Dates when stabilization measures are initiated:

<u>Stabilization Activity</u>	<u>Date</u>

Permanent Stormwater Section
for Regulated Activities
on the Edwards Aquifer Recharge Zone
and Relating to 30 TAC §213.5(b)(4)(C), (D)(li), (E), and (5), Effective June 1, 1999

REGULATED ENTITY NAME: Johnson Ranch

Permanent best management practices (BMPs) and measures that will be used during and after construction is completed.

1. N/A Permanent BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction.
2. N/A These practices and measures have been designed, and will be constructed, operated, and maintained to insure that 80% of the incremental increase in the annual mass loading of total suspended solids (TSS) from the site caused by the regulated activity is removed. These quantities have been calculated in accordance with technical guidance prepared or accepted by the executive director.

 — The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.
 — A technical guidance other than the TCEQ TGM was used to design permanent BMPs and measures for this site. The complete citation for the technical guidance that was used is provided below
3. N/A Owners must insure that permanent BMPs and measures are constructed and function as designed. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the appropriate regional office within 30 days of site completion.
4. √ Where a site is used for low density single-family residential development and has 20 % or less impervious cover, other permanent BMPs are not required. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

 √ This site will be used for low density single-family residential development and has 20% or less impervious cover.
 — This site will be used for low density single-family residential development but has more than 20% impervious cover.
 — This site will not be used for low density single-family residential development.
5. N/A The executive director may waive the requirement for other permanent BMPs for multi-family residential developments, schools, or small business sites where 20% or less impervious cover is used at the site. This exemption from permanent BMPs must be

recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

- ☐ **ATTACHMENT A - 20% or Less Impervious Cover Waiver.** This site will be used for multi-family residential developments, schools, or small business sites and has 20% or less impervious cover. A request to waive the requirements for other permanent BMPs and measures is found at the end of this form.
- ☐ This site will be used for multi-family residential developments, schools, or small business sites but has more than 20% impervious cover.
- ☐ This site will not be used for multi-family residential developments, schools, or small business sites.

6. **ATTACHMENT B - BMPs for Upgradient Stormwater.**

- ☐ A description of the BMPs and measures that will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site is identified as **ATTACHMENT B** at the end of this form.
- ☐ If no surface water, groundwater or stormwater originates upgradient from the site and flows across the site, an explanation is provided as **ATTACHMENT B** at the end of this form.
- ☒ If permanent BMPs or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site, an explanation is provided as **ATTACHMENT B** at the end of this form **below**.

All upgradient Stormwater from offsite will be diverted from the site. On the north boundary the upgradient Stormwater of Phase 1A, that originates on the Johnson Ranch site will be intercepted by the streets and captured by a temporary berm and area drain, then conveyed by storm sewer to a grass channel on the east side of the development. Along the west boundary the offsite Stormwater is diverted by an existing berm to the school site, where a grass swale carries the runoff to the stream on the south side of the school site. It will be captured in a swale and conveyed to the stream. All the upgradient flows are conveyed from the site to the tributaries of Cibolo Creek in grass swales with velocities less than 6 feet per second. (See Drainage Plan sheet for details)

7. **ATTACHMENT C - BMPs for On-site Stormwater.**

- ☐ A description of the BMPs and measures that will be used to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff from the site is identified as **ATTACHMENT C** at the end of this form.
- ☒ If permanent BMPs or measures are not required to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by

contaminated stormwater runoff, an explanation is provided as ~~ATTACHMENT C~~ at the end of this form below.

As specified in TAC Chapter 213.5 (b) (4) (D) (ii) (III) where a site is used for low density single-family residential development and has 20% or less impervious cover, other permanent BMPs measures are not required.

8. N/A **ATTACHMENT D - BMPs for Surface Streams.** A description of the BMPs and measures that prevent pollutants from entering surface streams, sensitive features, or the aquifer is provided at the end of this form. Each feature identified in the Geologic Assessment as "sensitive" or "possibly sensitive" has been addressed.
9. √ The applicant understands that to the extent practicable, BMPs and measures must maintain flow to naturally occurring sensitive features identified in either the geologic assessment, executive director review, or during excavation, blasting, or construction.
- √ The permanent sealing of or diversion of flow from a naturally-occurring "sensitive" or "possibly sensitive" feature that accepts recharge to the Edwards Aquifer as a permanent pollution abatement measure has not been proposed for any naturally-occurring "sensitive" or "possibly sensitive" features on this site.
- N/A **ATTACHMENT E - Request to Seal Features.** A request to seal a naturally-occurring "sensitive" or "possibly sensitive" feature, that includes a justification as to why no reasonable and practicable alternative exists, is found at the end of this form. A request and justification has been provided for each feature.
10. N/A **ATTACHMENT F - Construction Plans.** Construction plans and design calculations for the proposed permanent BMPs and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information have been signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed permanent BMPs and measures are provided at the end of this form. Design Calculations, TCEQ Construction Notes, all man-made or naturally occurring geologic features, all proposed structural measures, and appropriate details must be shown on the construction plans.
11. N/A **ATTACHMENT G - Inspection, Maintenance, Repair and Retrofit Plan.** A plan for the inspection, maintenance, repair, and, if necessary, retrofit of the permanent BMPs and measures is provided at the end of this form. The plan has been prepared and certified by the engineer designing the permanent BMPs and measures. The plan has been signed by the owner or responsible party. The plan includes procedures for documenting inspections, maintenance, repairs, and, if necessary, retrofits as well as a discussion of record keeping procedures.
12. N/A The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.
- Pilot-scale field testing (including water quality monitoring) may be required for BMPs that are not contained in technical guidance recognized by or prepared by the executive director.
- **ATTACHMENT H - Pilot-Scale Field Testing Plan.** A plan for pilot-scale field testing is provided at the end of this form.

13. √ **ATTACHMENT I - Measures for Minimizing Surface Stream Contamination.** A description of the measures that will be used to avoid or minimize surface stream contamination and changes in the way in which water enters a stream as a result of the construction and development is provided at the end of this form. The measures address increased stream flashing, the creation of stronger flows and in-stream velocities, and other in-stream effects caused by the regulated activity which increase erosion that results in water quality degradation.

All the flows are conveyed from the site to the tributaries of Cibolo Creek in grass swales with velocities less than 6 feet per second. (See Drainage Plan sheet for details)

Responsibility for maintenance of permanent BMPs and measures after construction is complete.

14. √ The applicant is responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred.
15. √ A copy of the transfer of responsibility must be filed with the executive director at the appropriate regional office within 30 days of the transfer if the site is for use as a multiple single-family residential development, a multi-family residential development, or a non-residential development such as commercial, industrial, institutional, schools, and other sites where regulated activities occur.

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **PERMANENT STORMWATER SECTION** is hereby submitted for TCEQ review and executive director approval. The application was prepared by:

Print Name of Customer/Agent


Signature of Customer/Agent

8/9/07
Date

Agent Authorization Form
For Required Signature
Edwards Aquifer Protection Program
Relating to 30 TAC Chapter 213
Effective June 1, 1999

I Michael L. Schoenfeld,
Print Name

Vice President
Title - Owner/President/Other

of DH/JB Partnership, Ltd.
Corporation/Partnership/Entity Name

have authorized Charles W. Kaough, P.E.
Print Name of Agent/Engineer

of Loomis Austin, Inc.
Print Name of Firm

to represent and act on the behalf of the above named Corporation, Partnership, or Entity for the purpose of preparing and submitting this plan application to the Texas Commission on Environmental Quality (TCEQ) for the review and approval consideration of regulated activities.

I also understand that:

1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 213 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to \$10,000 per day per violation.
2. For applicants who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.
3. Application fees are due and payable at the time the application is submitted. The application fee must be sent to the TCEQ cashier or to the appropriate regional office. The application will not be considered until the correct fee is received by the commission.

4. A notarized copy of the Agent Authorization Form must be provided for the person preparing the application, and this form must accompany the completed application.

Michael L. Schoenfeld
Applicant's Signature

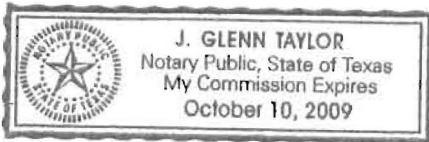
08/01/07
Date

THE STATE OF Texas §

County of Travis §

BEFORE ME, the undersigned authority, on this day personally appeared Michael L. Schoenfeld known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that (s)he executed same for the purpose and consideration therein expressed.

GIVEN under my hand and seal of office on this 1st day of August, 2007.



NOTARY PUBLIC

J. Glenn Taylor

Typed or Printed Name of Notary

J. Glenn Taylor

MY COMMISSION EXPIRES:

October 10, 2009

Texas Commission on Environmental Quality
Edwards Aquifer Protection Plan
Application Fee Form

NAME OF PROPOSED REGULATED ENTITY: **Johnson Ranch**

REGULATED ENTITY LOCATION:

NAME OF CUSTOMER:

CONTACT PERSON: Charles W. Kaough, P.E. PHONE: 512-327-1180
(Please Print)

Customer Reference Number (if issued): CN 602996472 (nine digits)

Regulated Entity Reference Number (if issued): RN _____ (nine digits)

AUSTIN REGIONAL OFFICE (3373)

- ☐ Hays
☐ Travis
☐ Williamson

SAN ANTONIO REGIONAL OFFICE (3362)

- ☐ Bexar ☐ Medina
☒ Comal ☐ Uvalde
☐ Kinney

APPLICATION FEES MUST BE PAID BY CHECK, CERTIFIED CHECK, OR MONEY ORDER, PAYABLE TO THE Texas Commission on Environmental Quality. YOUR CANCELED CHECK WILL SERVE AS YOUR RECEIPT. **THIS FORM MUST BE SUBMITTED WITH YOUR FEE PAYMENT.** THIS PAYMENT IS BEING SUBMITTED TO (CHECK ONE):

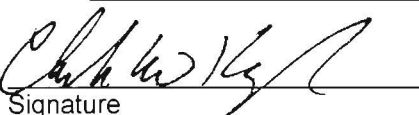
☒ **SAN ANTONIO REGIONAL OFFICE**

☐ **Mailed to TCEQ:**
TCEQ - Cashier
Revenues Section
Mail Code 214
P.O. Box 13088
Austin, TX 78711-3088

☐ **AUSTIN REGIONAL OFFICE**

☐ **Overnight Delivery to TCEQ:**
TCEQ - Cashier
12100 Park 35 Circle
Building A, 3rd Floor
Austin, TX 78753
512/239-0347

Type of Plan	Size	Fee Due
Water Pollution Abatement, One Single Family Residential Dwelling	Acres	\$
Water Pollution Abatement, Multiple Single Family Residential and Parks	Acres	\$5,000.00
Water Pollution Abatement, Non-residential	Acres	\$
Sewage Collection System	L.F.	\$
Lift Stations without sewer lines	Acres	\$
Underground or Aboveground Storage Tank Facility	Tanks	\$
Piping System(s)(only)	Each	\$
Exception	Each	\$
Extension of Time	Each	\$


Signature

8/20/02
Date

If you have questions on how to fill out this form or about the Edwards Aquifer protection program, please contact us at 210/490-3096 for projects located in the San Antonio Region or 512/339-2929 for projects located in the Austin Region.

Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512/239-3282.

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program
Application Fee Schedule
30 TAC §213.14 (effective 11/14/97) & 30 TAC §213.9 (effective 6/1/99)

Water Pollution Abatement Plans and Modifications

PROJECT	PROJECT AREA IN ACRES	FEE
One Single Family Residential Dwelling	<5	\$500
Multiple Single Family Residential and Parks	<5	\$1,000
	5 < 10	\$2,000
	10 < 50	\$3,000
	≥50	\$5,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	< 1	\$2,000
	1 < 5	\$3,000
	5 < 10	\$4,000
	≥10	\$5,000

Organized Sewage Collection Systems and Modifications

PROJECT	COST PER LINEAR FOOT	MINIMUM FEE MAXIMUM FEE
Sewage Collection Systems	\$0.50	\$500 - \$5,000

**Underground and Aboveground Storage Tank System
Facility Plans and Modifications**

PROJECT	COST PER TANK OR PIPING SYSTEM	MINIMUM FEE MAXIMUM FEE
Underground and Aboveground Storage Tank Facility	\$500	\$500 - \$5,000

Exception Requests

PROJECT	FEE
Exception Request	\$250

Extension of Time Requests

PROJECT	FEE
Extension of Time Request	\$100

TCEQ Core Data Form

TCEQ Use Only

If you have questions on how to fill out this form or about our Central Registry, please contact us at 512-239-5175.

Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512-239-3282.

SECTION I: General Information

1. Reason for Submission *Example: new wastewater permit; IHW registration; change in customer information; etc.*

New Water Pollution Abatement Plan

2. Attachments Describe Any Attachments: (ex: Title V Application, Waste Transporter Application, etc.)

YES ☒ NO ☐ N/A

3. Customer Reference Number-if issued

CN 602996472 (9 digits)

4. Regulated Entity Reference Number-if issued

RN none (9 digits)

SECTION II: Customer Information

5. Customer Role (Proposed or Actual) -- As It Relates to the Regulated Entity Listed on This Form

Please check one of the following: ☐ Owner ☐ Operator ☒ Owner and Operator

☐ Occupational Licensee

☐ Volunteer Cleanup Applicant

☐ Other

TCEQ Use Only

☐ Superfund

☐ PST

☐ Respondent

6. General Customer Information

☐ New Customer

☐ Change to Customer Information

☐ Change in Regulated Entity Ownership

☒ No Change *

*If A No Change and Section I is complete, skip to Section III - Regulated Entity Information.

7. Type of Customer:

☐ Individual

☐ Sole Proprietorship - D.B.A.

☐ Partnership

☐ Corporation

☐ Federal Government

☐ State Government

☐ County Government

☐ City Government

☐ Other Government

☐ Local Government

☐ Other:

8. Customer Name (If an individual, please print last name first)

If new name, enter previous name:

9. Mailing Address:

City

State

ZIP

ZIP + 4

10. Country Mailing Information if outside USA

N/A

11. E-Mail Address if applicable

12. Telephone Number

13. Extension or Code

14. Fax Number if applicable

N/A

15. Federal Tax ID (9 digits)

16. State Franchise Tax ID Number if applicable

17. DUNS Number if applicable (9 digits)

18. Number of Employees

☐ 0-20

☐ 21-100

☐ 101-250

☐ 251-500

☐ 501 and higher

19. Independently Owned and Operated?

☐ Yes

☐ No

SECTION III: Regulated Entity Information

20. General Regulated Entity Information

☒ New Regulated Entity ☐ Change to Regulated Entity Information ☐ No Change*

*If "No Change" and Section I is complete, skip to Section IV - Preparer Information.

21. Regulated Entity Name <i>(If an individual, please print last name first)</i>					
Johnson Ranch					
22. Street Address (No PO Boxes)					
		City	State	ZIP	ZIP + 4
23. Mailing Address		Attn: Charlie Hill			
		102A Cordillera Ridge			
		City	State	ZIP	ZIP + 4
		Boerne	Texas	78006	
24. E-Mail Address:					
25. Telephone Number		26. Extension or Code		27. Fax Number if applicable	
512-394-0635				866-260-0077	
28. Primary SIC Code (4 digits)		29. Secondary SIC Code (4 digits)		30. Primary NAICS Code (5 or 6 digits)	
8811					
				31. Secondary NAICS Code (5 or 6 digits)	
32. What is the Primary Business of this entity? <i>(Please do not repeat the SIC or NAICS description)</i>					
Single-family homes					
Questions 33 - 37 address geographic location. Please refer to the instructions for applicability.					
33. County		Comal			
34. Description of Physical Location					
Northeast corner of US 281 and Fm 1863. Entrance at FM1863 approximately 0.5 miles east from the intersection with US 281.					
35. Nearest City			State		Nearest Zip
Bulverde			Texas		78163
36. Latitude (N)			37. Longitude (W)		
<i>Degrees</i>	<i>Minutes</i>	<i>Seconds</i>	<i>Degrees</i>	<i>Minutes</i>	<i>Seconds</i>
29°	44'	57.35"	98°	25'	12.80"
38. TCEQ Programs In Which This Regulated Entity Participates <i>Not all programs have been listed. Please add to this list as needed. If you don't know or are unsure, please mark "Unknown". If you know a permit or registration # for this entity, please write it below the program.</i>					
Animal Feeding Operation		Petroleum Storage Tank		Water Rights	
Title V - Air		Wastewater Permit		√ WPAP Application	
Industrial & Hazardous Waste		Water Districts			
Municipal Solid Waste		Water Utilities		Unknown	
New Source Review - Air		Licensing - TYPE(s)			
Section IV: Preparer Information					
39. Name			40. Title		
Charles W. Kaough, P.E.			Professional Engineer		
41. Telephone Number		42. Extension or Code		43. Fax Number if applicable	
512-327-1180		none		512-327-4062	
44. E-mail Address:		ckaough@loomisaustin.com			

Water Pollution Abatement Plan Application
for Regulated Activities
on the Edwards Aquifer Recharge Zone
and Relating to 30 TAC §213.5(b), Effective June 1, 1999

REGULATED ENTITY NAME: Johnson Ranch

REGULATED ENTITY INFORMATION

1. The type of project is:
☒ Residential: # of Lots: 12
☐ Residential: # of Living Unit Equivalents:
☐ Commercial
☐ Industrial
☐ Other: _____
2. Total site acreage (size of property): 751.3 acres
3. Projected population: 36 persons
4. The amount and type of impervious cover expected after construction are shown below:

RECEIVED
DEC 04 2007
COUNTY ENGINEER

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	33,000	÷ 43,560 =	0.76
Parking	0	÷ 43,560 =	0
Other paved surfaces	160,592	÷ 43,560 =	3.69
Total Impervious Cover	193,592	÷ 43,560 =	4.44
Total Impervious Cover ÷ Total Acreage x 100 =			0.59 %

5. ☒ **ATTACHMENT A - Factors Affecting Water Quality.** A description of any factors that could affect surface water and groundwater quality is provided ~~at the end of this form~~ below.

Potential sources of pollution that may be expected to affect the quality of stormwater discharges from the construction site include:

- Soil erosion due to the clearing of the site for roads, buildings, and drainage structures.
- Oil, grease, fuel, and hydraulic fluid contamination from construction equipment and vehicle drippings.
- Hydrocarbons from asphalt paving operations.
- Miscellaneous trash and litter from construction workers and material wrappings.
- Construction debris.

- Concrete truck washout.

6. ☒ Only inert materials as defined by 30 TAC §330.2 will be used as fill material.

FOR ROAD PROJECTS ONLY – This is not a road project

Complete questions 7-12 if this application is exclusively for a road project.

RECEIVED

DEC 04 2007

COUNTY ENGINEER

7. Type of project:

- ☐ TXDOT road project.
- ☐ County road or roads built to county specifications.
- ☐ City thoroughfare or roads to be dedicated to a municipality.
- ☐ Street or road providing access to private driveways.

8. Type of pavement or road surface to be used:

- ☐ Concrete
- ☐ Asphaltic concrete pavement
- ☐ Other:

9. Length of Right of Way (R.O.W.): _____ feet.
 Width of R.O.W.: _____ feet.
 L x W = _____ Ft² ÷ 43,560 Ft²/Acre = _____ acres.

10. Length of pavement area: _____ feet.
 Width of pavement area: _____ feet.
 L x W = _____ Ft² ÷ 43,560 Ft²/Acre = _____ acres.
 Pavement area _____ acres ÷ R.O.W. area _____ acres x 100 = _____ % impervious cover.

11. ☐ A rest stop will be included in this project.
☐ A rest stop will **not** be included in this project.

12. ☐ Maintenance and repair of existing roadways that do not require approval from the TCEQ Executive Director. Modifications to existing roadways such as widening roads/adding shoulders totaling more than one-half (1/2) the width of one (1) existing lane require prior approval from the TCEQ.

STORMWATER TO BE GENERATED BY THE PROPOSED PROJECT

13. **ATTACHMENT B - Volume and Character of Stormwater.** A description of the volume and character (quality) of the stormwater runoff which is expected to occur from the proposed project is provided ~~at the end of this form~~ **below**. The estimates of stormwater runoff quality and quantity should be based on area and type of impervious cover. Include the runoff coefficient of the site for both pre-construction and post-construction conditions.

Stormwater runoff will increase as a result of this development. For a 25 year storm event, the overall project will generate runoff approximating 106.7 cfs. The runoff coefficient for the site changes from approximately 0.44 before development to approximately 0.55 after development. Values are based on the Rational Method using runoff coefficients as the TxDOT Hydraulic Design Manual - Comal County

WASTEWATER TO BE GENERATED BY THE PROPOSED PROJECT

14. The character and volume of wastewater is shown below:

<u>100</u> % Domestic	<u>3,300</u> gallons/day
<u> </u> % Industrial	<u> </u> gallons/day
<u> </u> % Commingled	<u> </u> gallons/day

TOTAL 3,300 gallons/day

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DEC 04 2007
COUNTY ENGINEER

15. Wastewater will be disposed of by:

 On-Site Sewage Facility (OSSF/Septic Tank):

ATTACHMENT C - Suitability Letter from Authorized Agent. An on-site sewage facility will be used to treat and dispose of the wastewater. The appropriate licensing authority's (authorized agent) written approval is provided at the end of this form. It states that the land is suitable for the use of an on-site sewage facility or identifies areas that are not suitable.

 Each lot in this project/development is at least one (1) acre (43,560 square feet) in size. The system will be designed by a licensed professional engineer or registered sanitarian and installed by a licensed installer in compliance with 30 TAC Chapter 285.

√ Sewage Collection System (Sewer Lines):

 Private service laterals from the wastewater generating facilities will be connected to an existing SCS.

√ Private service laterals from the wastewater generating facilities will be connected to a proposed SCS.

 The SCS was previously submitted on .

 The SCS was submitted with this application.

√ The SCS will be submitted at a later date. The owner is aware that the SCS may not be installed prior to executive director approval.

The sewage collection system will convey the wastewater to the (name) Treatment Plant. The treatment facility is : Comal County WCID #1
 existing.

√ proposed.

16. √ All private service laterals will be inspected as required in 30 TAC §213.5.

SITE PLAN REQUIREMENTS

Items 17 through 27 must be included on the Site Plan.

17. The Site Plan must have a minimum scale of 1" = 400'.

Site Plan Scale: 1" = 200 '.

18. 100-year floodplain boundaries

√ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.

 No part of the project site is located within the 100-year floodplain.

The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): **FIRM Map for Comal County, TX – Panel 55 of 130 – 485463 055D – 7/17/95**

DEC 04 2007

COUNTY ENGINEER

19. ☒ The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. Show lots, recreation centers, buildings, roads, etc.
☐ The layout of the development is shown with existing contours. Finished topographic contours will not differ from the existing topographic configuration and are not shown.
20. All known wells (oil, water, unplugged, capped and/or abandoned, test holes, etc.):
☒ There are 1 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply)
☐ The wells are not in use and have been properly abandoned.
☐ The wells are not in use and will be properly abandoned.
☒ The wells are in use and comply with 30 TAC §238.
☐ There are no wells or test holes of any kind known to exist on the project site.
21. Geologic or manmade features which are on the site:
☒ All **sensitive and possibly sensitive** geologic or manmade features identified in the Geologic Assessment are shown and labeled.
☐ No **sensitive and possibly sensitive** geologic or manmade features were identified in the Geologic Assessment.
N/A **ATTACHMENT D - Exception to the Required Geologic Assessment.** An exception to the Geologic Assessment requirement is requested and explained in ATTACHMENT D provided at the end of this form. Geologic or manmade features were found and are shown and labeled.
N/A **ATTACHMENT D - Exception to the Required Geologic Assessment.** An exception to the Geologic Assessment requirement is requested and explained in ATTACHMENT D provided at the end of this form. No geologic or manmade features were found.
22. ☒ The drainage patterns and approximate slopes anticipated after major grading activities.
23. ☒ Areas of soil disturbance and areas which will not be disturbed.
24. ☒ Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.
25. ☒ Locations where soil stabilization practices are expected to occur.
26. ☒ Surface waters (including wetlands).
27. ☒ Locations where stormwater discharges to surface water or sensitive features.
☐ There will be no discharges to surface water or sensitive features.

ADMINISTRATIVE INFORMATION

28. ☒ One (1) original and three (3) copies of the completed application have been provided.
29. ☒ Any modification of this WPAP will require TCEQ executive director approval, prior to construction, and may require submission of a revised application, with appropriate fees.

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **WATER POLLUTION ABATEMENT PLAN APPLICATION FORM** is hereby submitted for TCEQ review and executive director approval. The form was prepared by:

Print Name of Customer/Agent



Signature of Customer/Agent

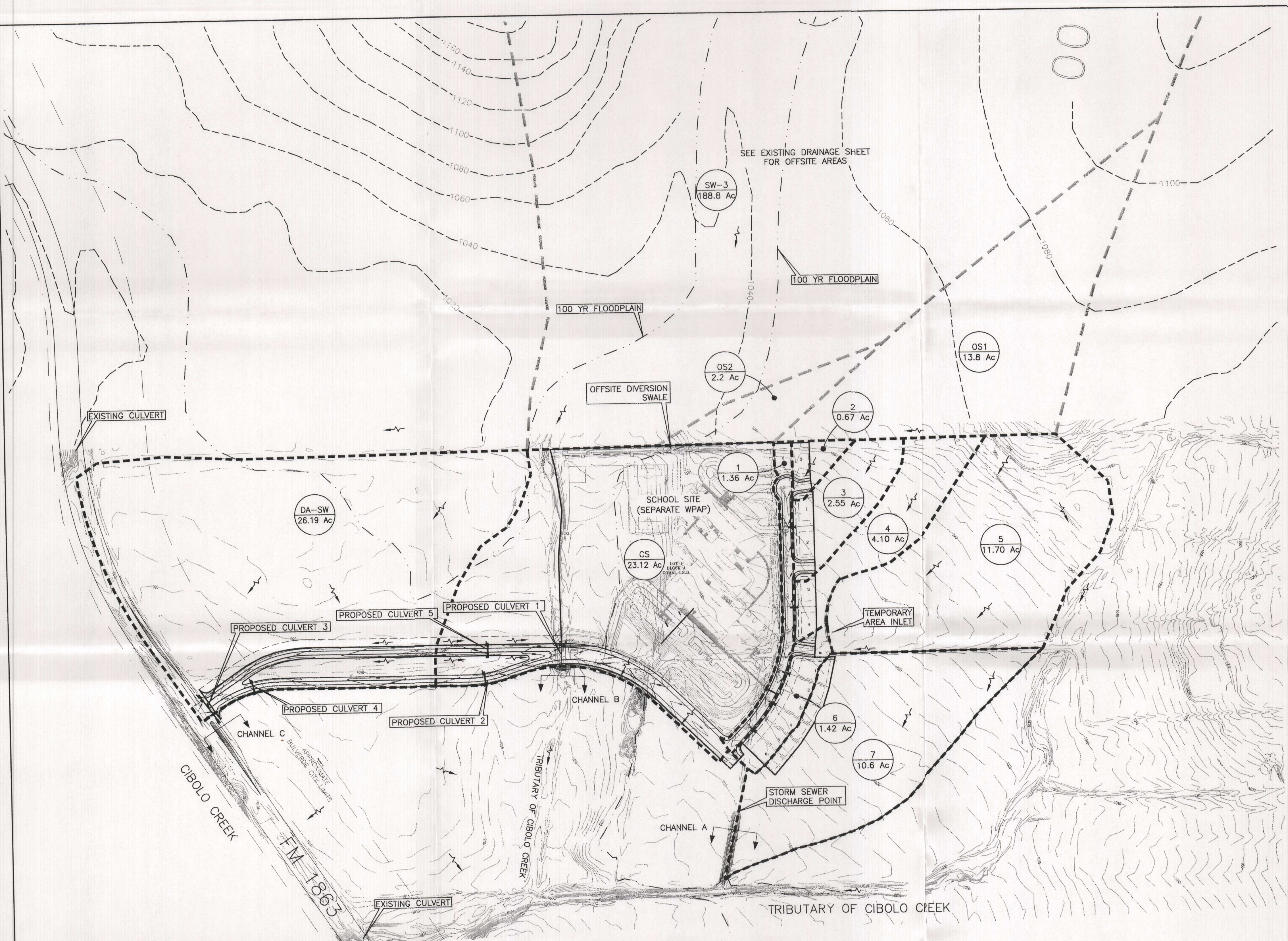
12/12/07

Date

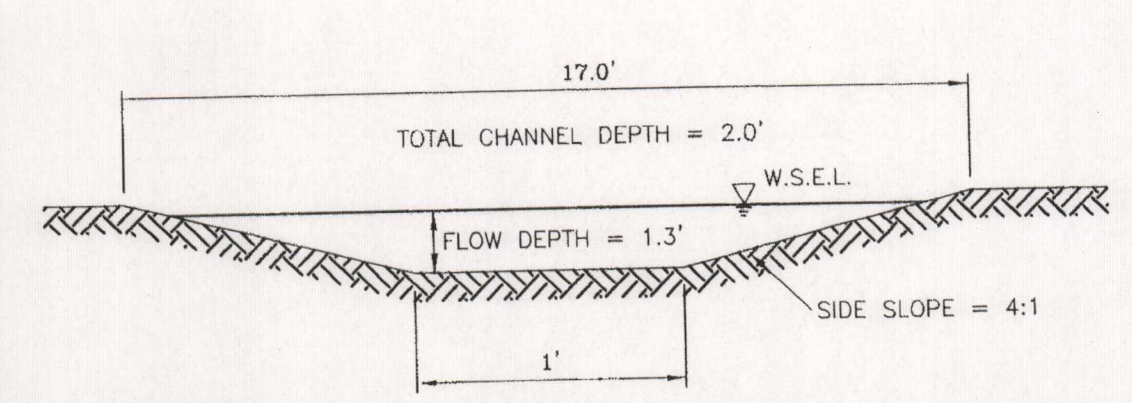
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DEC 04 2007

COUNTY ENGINEER

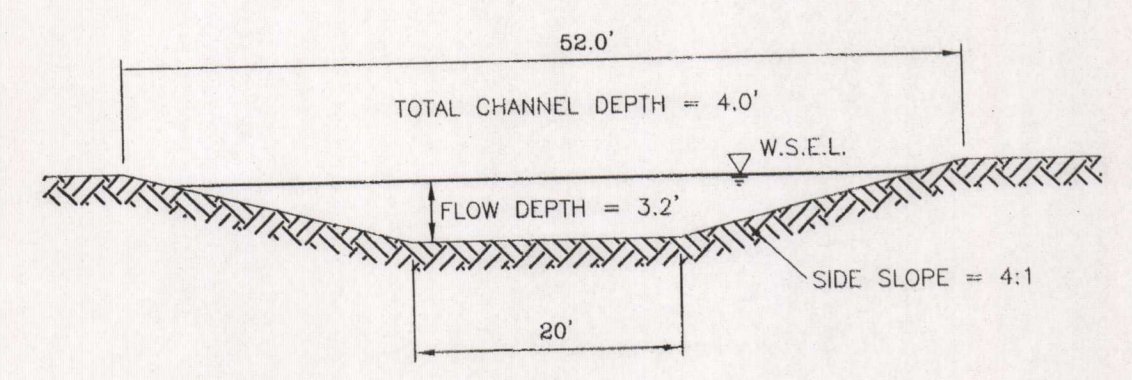


DRAINAGE CHANNEL DATA:
BOTTOM WIDTH = 1 ft
SIDE SLOPES = 4:1
MANNING'S n = 0.03
CHANNEL SLOPE = 0.01
DEPTH = 1.3 ft
DISCHARGE(100) = 30.0 cfs
VELOCITY = 4.8 fps
FLOW AREA = 6.51 sf
FROUDE NUMBER = 0.95



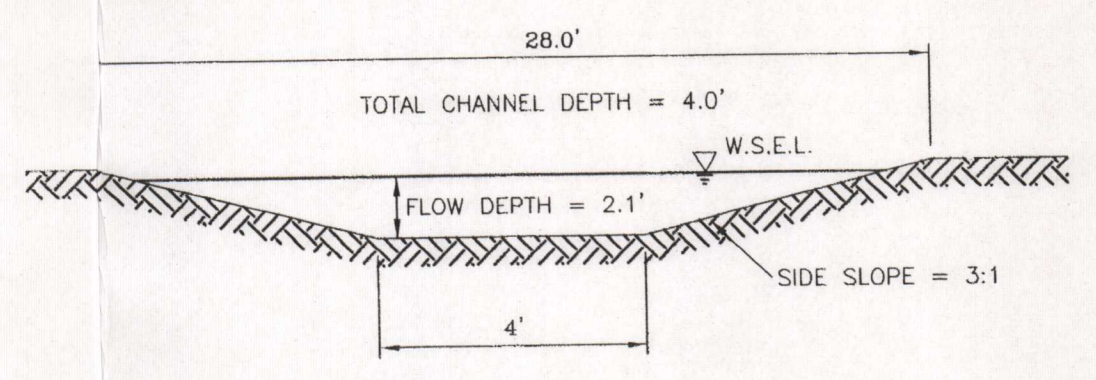
TYPICAL CROSS SECTION CHANNEL C
N.T.S.

DRAINAGE CHANNEL DATA:
BOTTOM WIDTH = 20 ft
SIDE SLOPES = 4:1
MANNING'S n = 0.03
CHANNEL SLOPE = 0.01
DEPTH = 3.2 ft
DISCHARGE(100) = 900.0 cfs
VELOCITY = 4.58 fps
FLOW AREA = 220.3 sf
FROUDE NUMBER = 0.89



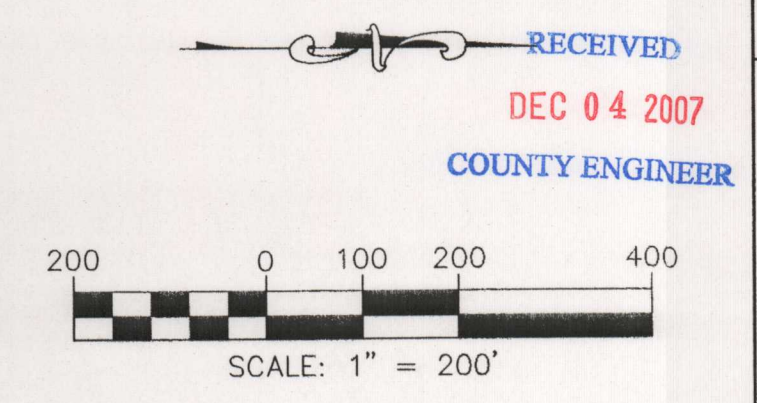
TYPICAL CROSS SECTION CHANNEL B
N.T.S.

DRAINAGE CHANNEL DATA:
BOTTOM WIDTH = 4 ft
SIDE SLOPES = 3:1
MANNING'S n = 0.03
CHANNEL SLOPE = 0.01
DEPTH = 2.1 ft
DISCHARGE(100) = 130.0 cfs
VELOCITY = 5.82 fps
FLOW AREA = 22.34 sf
FROUDE NUMBER = 0.89



TYPICAL CROSS SECTION CHANNEL A
N.T.S.

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SAN ANTONIO REGION
2007 OCT 11 AM 11:20



- LEGEND**
- BOUNDARY LINE
 - PROPOSED R.O.W.
 - LOT LINE
 - EASEMENT LINE
 - BUILDING LINE
 - CURB AND GUTTER
 - DRAINAGE AREA
 - EXISTING 1 ft CONTOUR
 - EXISTING 5 ft CONTOUR
 - PROPOSED 1 ft CONTOUR
 - PROPOSED 5 ft CONTOUR
 - RUNOFF FLOW ARROW
 - DRAINAGE AREA IDENTIFIER (XX, XX.XX)
 - STORM SEWER DISCHARGE HEADWALL
 - PROPOSED SS INLET
 - HIGH POINT (HP)
 - LOW POINT (LP)
 - TREE TO BE PRESERVED (XX)
 - TREE TO BE REMOVED (XX.XX)

NOTE:

- 100YR. FLOODPLAIN FROM FEMA FIRM PANEL 485463-0055D (JULY 17, 1995).
- TEMPORARY E-S CONTROLS DESIGNED PER TCEQ REQUIREMENTS. TEMPORARY DIVERSION METHODS SHOWN ON SHEET 5 THAT TEMPORARILY MODIFY PROPOSED OFFSITE DRAINAGE AREAS SHOWN ON THIS SHEET.

AREAS DA-1 THROUGH DA-6 ARE TO BE CAPTURED AND CONVEYED BY PROPOSED STORM SEWER SYSTEM.

JOHNSON RANCH PHASE 1A DRAINAGE PEAK FLOW CALCULATION PROPOSED CONDITIONS											
	OS1	OS2	CS	1	2	3	4	5	6	7	SW
Drainage Area (Ac.)	13.8	2.2	21.8	1.36	0.67	2.55	4.1	11.7	1.42	10.6	26.19
Impervious cover	35%	20%	24%	74%	21%	9%	3%	1%	35%	1%	7%
Tc	19.70	18.85	14.26	12.13	17.72	19.91	23.12	20.45	9.44	17.88	41.44
IMPERVIOUS "C" VALUES*											
5-yr	0.42	0.42	0.30	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
10-yr	0.42	0.42	0.30	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
25-yr	0.42	0.42	0.30	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
50-yr	0.42	0.42	0.30	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
100-yr	0.97	0.42	0.30	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
PERVIOUS "C" VALUES*											
5-yr	0.42	0.42	0.46	0.46	0.42	0.42	0.42	0.42	0.42	0.42	0.25
10-yr	0.42	0.42	0.46	0.46	0.42	0.42	0.42	0.42	0.42	0.42	0.25
25-yr	0.42	0.42	0.46	0.46	0.42	0.42	0.42	0.42	0.42	0.42	0.25
50-yr	0.42	0.42	0.46	0.46	0.42	0.42	0.42	0.42	0.42	0.42	0.25
100-yr	0.42	0.42	0.46	0.46	0.42	0.42	0.42	0.42	0.42	0.42	0.25
CONSTANT "C" VALUES											
5-yr	0.42	0.42	0.47	0.84	0.53	0.47	0.44	0.42	0.61	0.43	0.30
10-yr	0.42	0.42	0.47	0.84	0.53	0.47	0.44	0.42	0.61	0.43	0.30
25-yr	0.42	0.42	0.47	0.84	0.53	0.47	0.44	0.42	0.61	0.43	0.30
50-yr	0.42	0.42	0.47	0.84	0.53	0.47	0.44	0.42	0.61	0.43	0.30
100-yr	0.61	0.42	0.47	0.84	0.53	0.47	0.44	0.42	0.61	0.43	0.30
RAINFALL INTENSITIES (in./hr)**											
5-yr	5.07	5.19	5.99	6.47	5.36	5.04	4.64	4.97	7.21	5.34	3.25
10-yr	5.85	5.99	6.90	7.44	6.18	5.81	5.35	5.73	8.29	6.16	3.76
25-yr	6.72	6.88	7.91	8.53	7.10	6.68	6.16	6.59	9.49	7.07	4.34
50-yr	7.34	7.51	8.62	9.28	7.75	7.30	6.74	7.20	10.31	7.72	4.78
100-yr	8.38	8.57	9.86	10.63	8.85	8.33	7.68	8.21	11.82	8.81	5.43
PEAK FLOW RATES (cfs)											
5-yr	29.4	4.8	61.3	7.4	1.9	6.0	8.3	24.7	6.3	24.1	25.7
10-yr	33.9	5.5	70.6	8.5	2.2	6.9	9.6	28.5	7.2	27.8	29.8
25-yr	39.9	6.4	81.0	9.7	2.5	8.0	11.1	32.7	8.3	31.9	34.4
50-yr	42.6	6.9	88.3	10.6	2.8	8.7	12.1	35.8	9.0	34.8	37.9
100-yr	50.8	7.9	100.9	12.1	3.2	9.9	13.8	40.8	10.3	39.8	43.0

*unroof coefficients (C) are taken from the TR55
**coefficients c and d for the Rainfall Intensity-Duration Frequency Curve
from TxDOT Hydraulic Design Manual-Comal County

JOHNSON RANCH
PHASE 1A
PROPOSED CONDITIONS
DRAINAGE PLAN

SHEET NO.

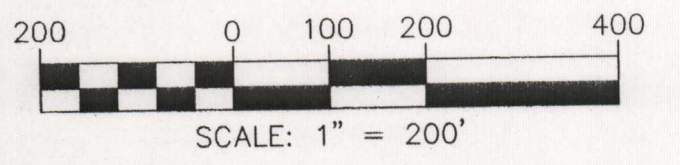
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DESIGNED BY	CK	N.T.	CK	CK	NO.	DATE	BY	DATE
DRAWN BY								
CHECKED BY								
APPROVED BY								
DATE								



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COUNTY ENGINEER



LEGEND

BOUNDARY LINE

MATCH LINE

POTENTIAL FUTURE
DEVELOPMENT

SITE BOUNDARY

SITE BOUNDARY

JOHNSON RANCH
PHASE 1A

FEMA 100YR FLOODPLAIN

THIS 16.06 ACRE TRACT IS
EXCLUDED FROM THIS PLAN

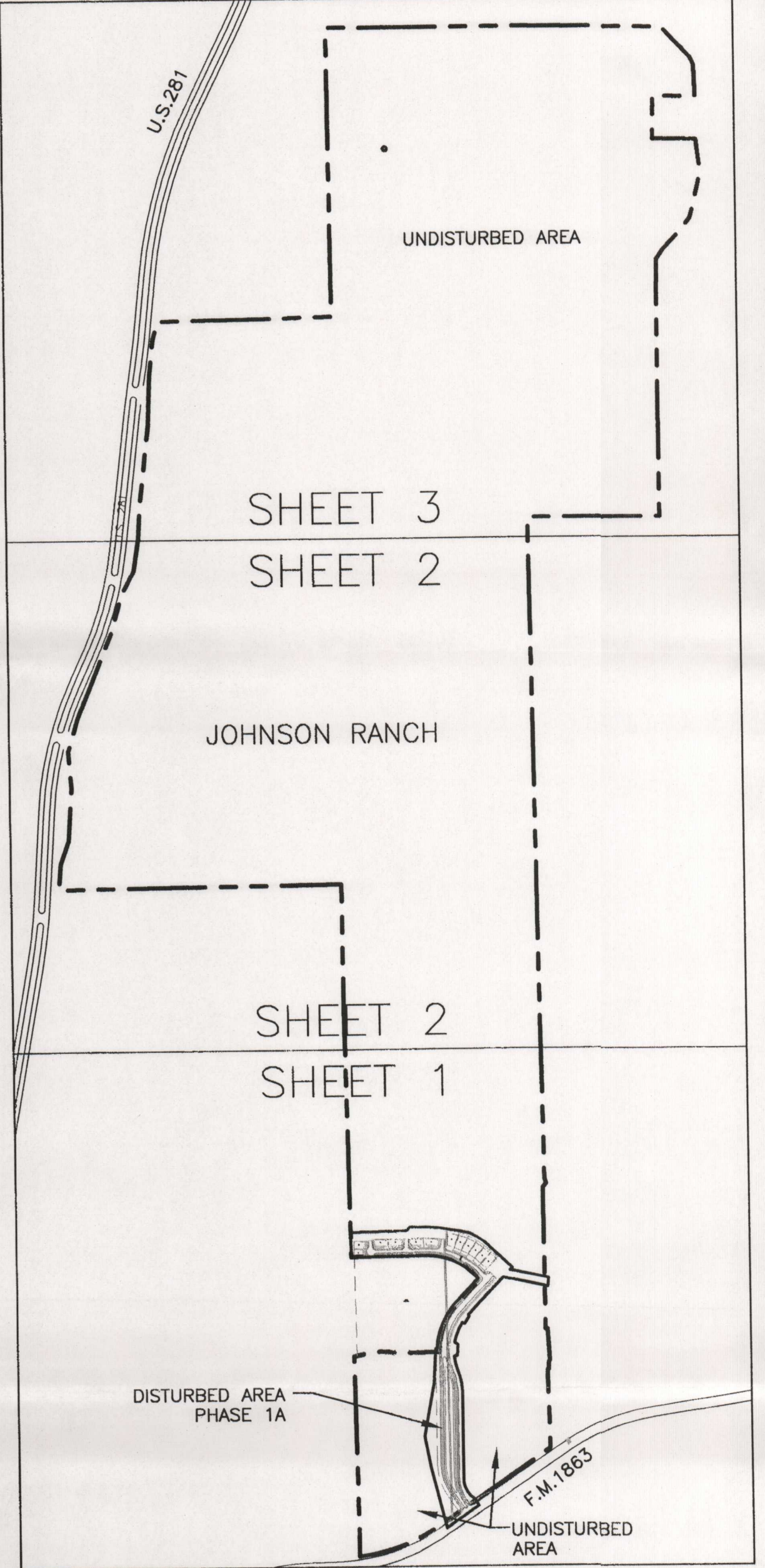
TRIBUTARY OF CIBOLO CREEK

REMOVE EXISTING
PAVEMENT

F.M. 1863

CIBOLO CREEK

TOTAL SITE AREA = 751.3 ACRES
DISTURBED AREA PHASE 1A = 13.1 ACRES
UNDISTURBED AREA = 738.2 ACRES



INDEX MAP

IMPERVIOUS COVER DATA					
Predevelopment Impervious Cover	Predevelopment		Phase 1A		
	SF	AC	SF	AC	
Predevelopment structures	31,850	0.73	0	0.00	
Predevelopment ranch roads	348,516	8.00	-20,693	-0.48	
Predevelopment other pavement	11,591	0.27	0	0.00	
Total Predevelopment Impervious Cover	391,957	9.00	-20,693	-0.48	
Single-Family Residential Lot Impervious Cover Allocations*					
Lot Area	Imp. Cvr.		Lots		
One (1) acre or greater	5,000		0	0	0.00
10,001 SF - one (1) acre	3,000		6	18,000	0.41
5,751 SF - 10,000 SF	2,500		6	15,000	0.34
Less than 5,750 SF	2,000		0	0	0.00
New structures				33,000	0.76
* Impervious cover generated during home building stage allocated based on City Of Austin Environmental Criteria Manual (June 2007, Sect 1.8.1.C)					
New Impervious Cover					
New structures				33,000	0.76
New parking				0	0.00
New paved roads w/ sidewalk				160,592	3.69
New other pavement				0	0.00
Total New Impervious Cover				193,592	4.44

IMPERVIOUS COVER SUMMARY		
IMPERVIOUS COVER	SQ. FT.	ACRES
STRUCTURES/ROOFTOPS	33,000	0.76
PARKING	0	0
OTHER PAVED SURFACES	160,592	3.69
TOTAL I.C.	193,592	4.44
TOTAL SITE ACREAGE		751.3
TOTAL % I.C.	0.59%	

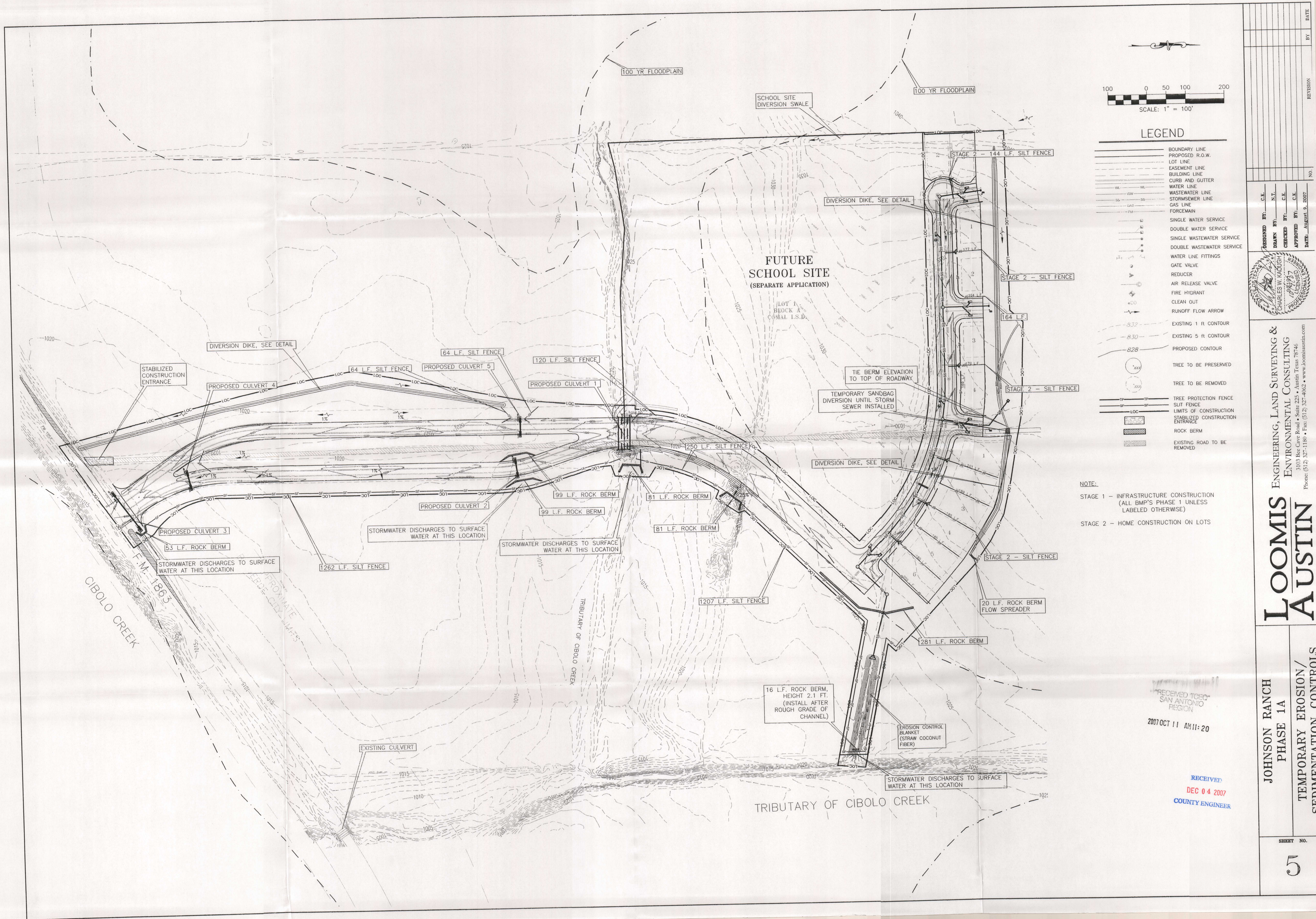
ENGINEERING, LAND SURVEYING &
ENVIRONMENTAL CONSULTING
3103 Bee Cave Road • Suite 225 • Austin Texas 78746
Phone: (512) 327-1180 • Fax: (512) 327-4062 • www.loomisusaustin.com

LOOMIS
AUSTIN

JOHNSON RANCH
PHASE 1A
PROPOSED CONDITIONS
SITE PLAN
1 OF 3

SHEET NO.

1



DESIGNED BY:		CHECKED BY:		APPROVED BY:		DATE:	
C.K.		C.K.		C.K.		AUGUST 9, 2007	
DRAWN BY:		N.T.		C.K.		BY:	
C.K.		N.T.		C.K.		REVISION	
NO.		NO.		NO.		NO.	

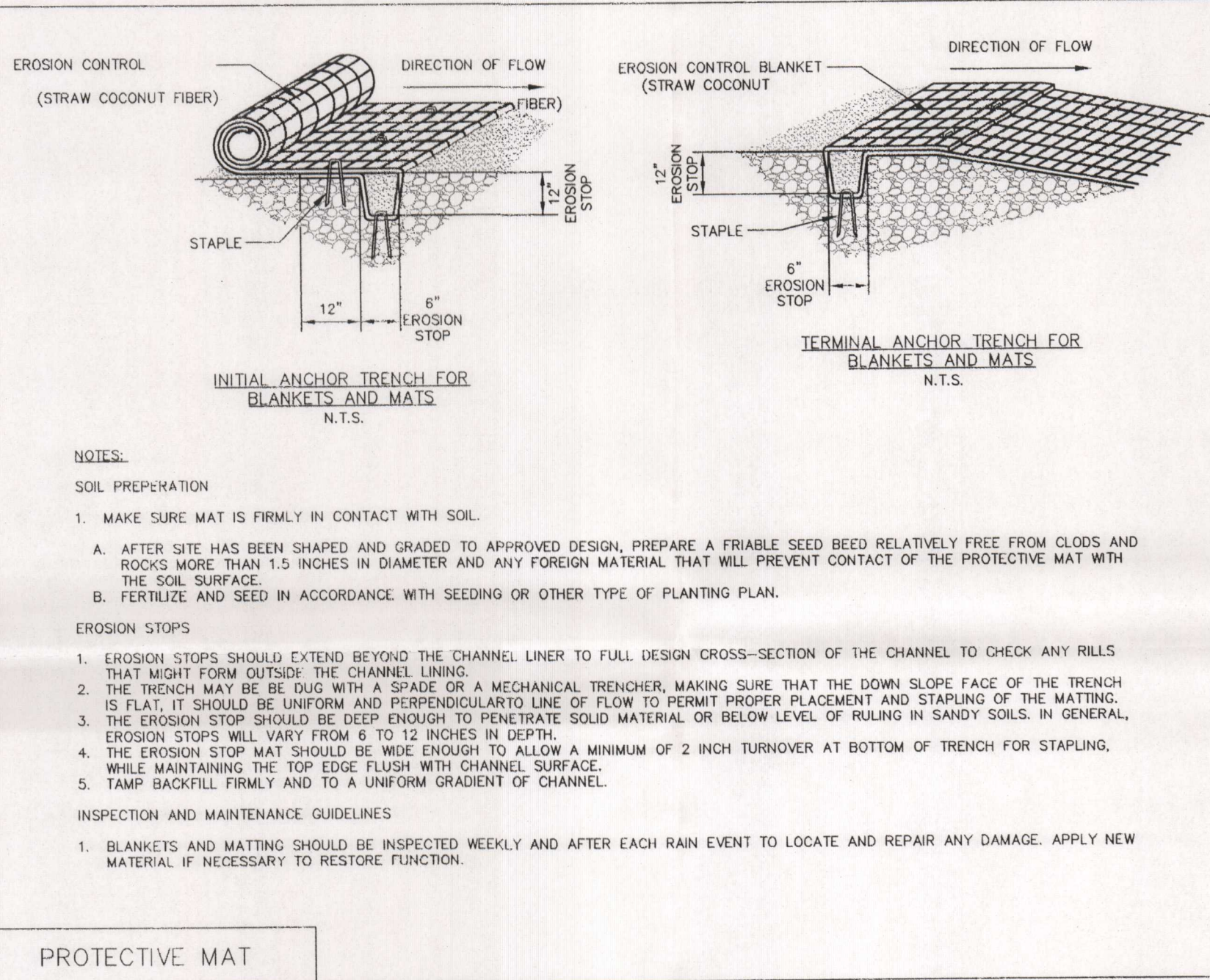
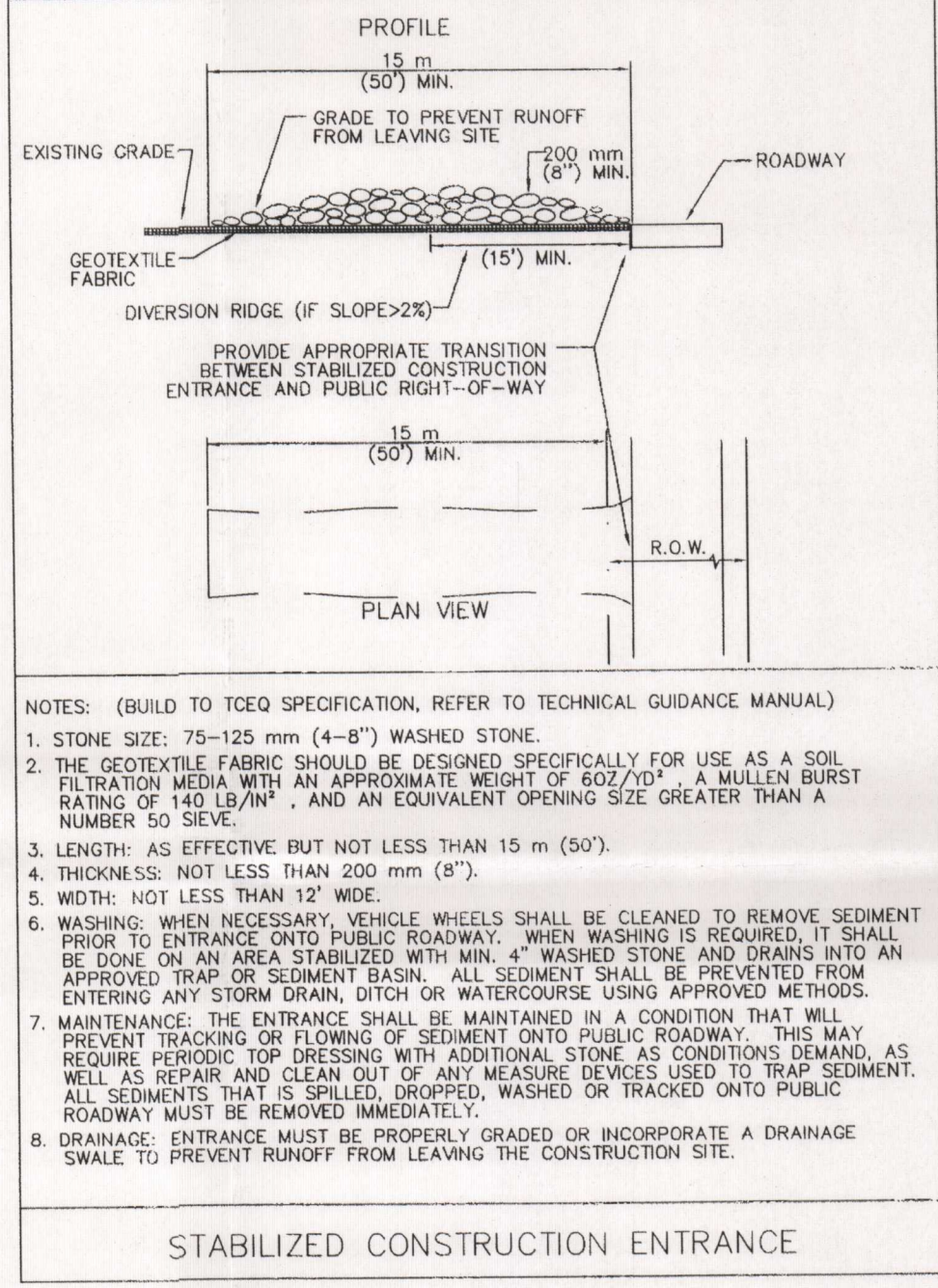
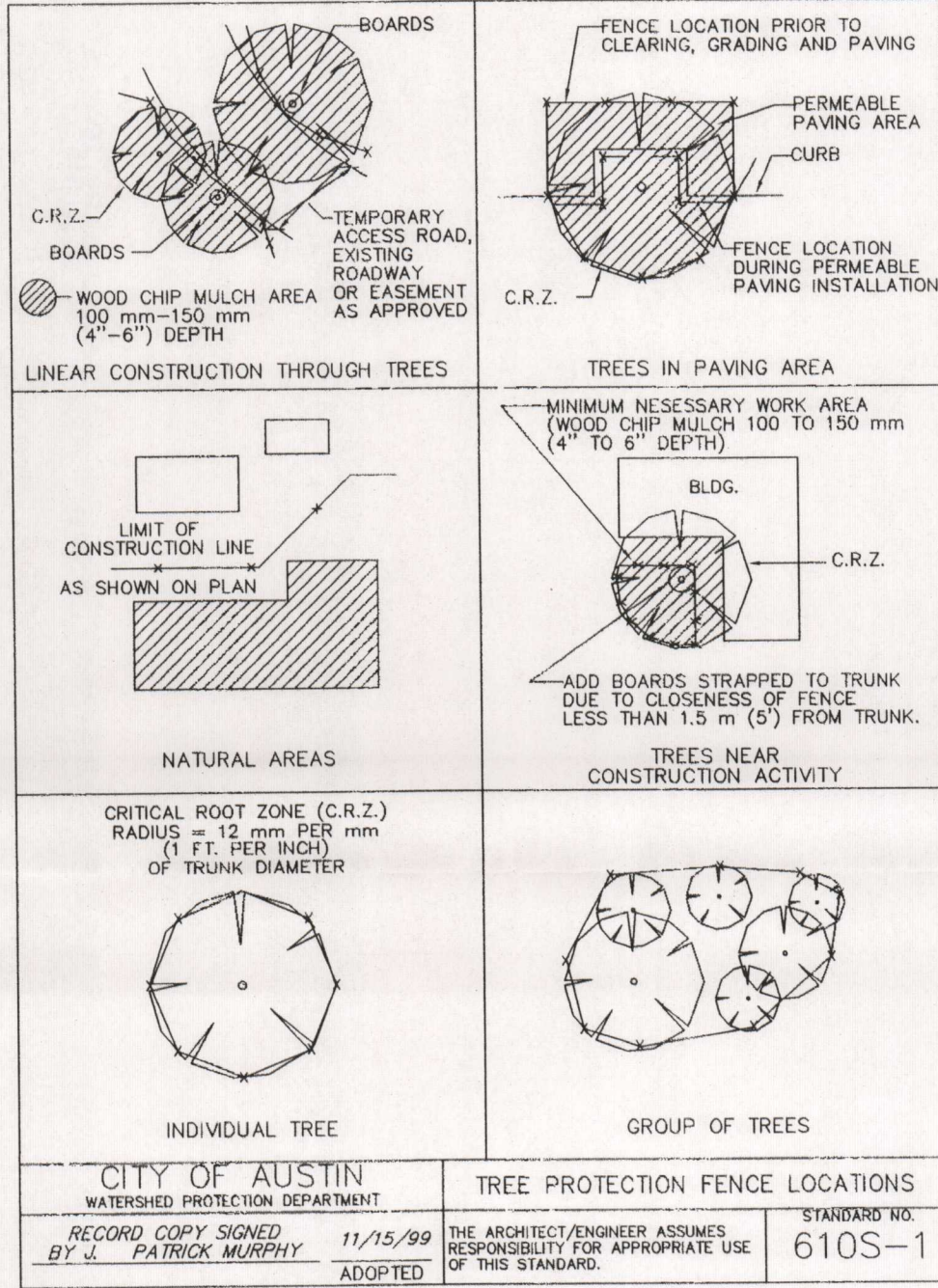
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JOHNSON RANCH PHASE 1A
TEMPORARY EROSION/ SEDIMENTATION CONTROLS

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SHEET NO. 5



TCEQ-0592 (REV. 3/15/07)

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY WATER POLLUTION ABATEMENT PLAN GENERAL CONSTRUCTION NOTES

1. WRITTEN CONSTRUCTION NOTIFICATION MUST BE GIVEN TO THE APPROPRIATE TCEQ REGIONAL OFFICE NO LATER THAN 48 HOURS PRIOR TO COMMENCEMENT OF THE REGULATED ACTIVITY. INFORMATION MUST INCLUDE THE DATE ON WHICH THE REGULATED ACTIVITY WILL COMMENCE, THE NAME OF THE APPROVED PLAN FOR THE REGULATED ACTIVITY, AND THE NAME OF THE PRIME CONTRACTOR AND THE NAME AND TELEPHONE NUMBER OF THE CONTACT PERSON.
2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROJECT MUST BE PROVIDED WITH COMPLETE COPIES OF THE APPROVED WATER POLLUTION ABATEMENT PLAN AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTORS ARE REQUIRED TO KEEP ON-SITE COPIES OF THE APPROVED PLAN AND APPROVAL LETTER.
3. IF ANY SENSITIVE FEATURE IS DISCOVERED DURING CONSTRUCTION, ALL REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MUST BE SUSPENDED IMMEDIATELY. THE APPROPRIATE TCEQ REGIONAL OFFICE MUST BE IMMEDIATELY NOTIFIED OF ANY SENSITIVE FEATURES ENCOUNTERED DURING CONSTRUCTION. THE REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MAY NOT PROCEED UNTIL THE TCEQ HAS REVIEWED AND APPROVED THE METHODS PROPOSED TO PROTECT THE SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM ANY POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY.
4. NO TEMPORARY ABOVEGROUND HYDROCARBON AND HAZARDOUS SUBSTANCE STORAGE TANK SYSTEM IS INSTALLED WITHIN 150 FEET OF A DOMESTIC, INDUSTRIAL, IRRIGATION, OR PUBLIC WATER SUPPLY WELL, OR OTHER SENSITIVE FEATURE.
5. PRIOR TO COMMENCEMENT OF CONSTRUCTION, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY SELECTED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS AND GOOD ENGINEERING PRACTICES. CONTROLS SPECIFIED IN THE TEMPORARY STORM WATER SECTION OF THE APPROVED EDWARDS AQUIFER PROTECTION PLAN ARE REQUIRED DURING CONSTRUCTION. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS. THE CONTROLS MUST REMAIN IN PLACE UNTIL DISTURBED AREAS ARE REVEGETATED AND THE AREAS HAVE BECOME PERMANENTLY STABILIZED.
6. IF SEDIMENT ESCAPES THE CONSTRUCTION SITE, OFF-SITE ACCUMULATIONS OF SEDIMENT MUST BE REMOVED AT A FREQUENCY SUFFICIENT TO MINIMIZE OFFSITE IMPACTS TO WATER QUALITY (E.G., FUGITIVE SEDIMENT IN STREET BEING WASHED INTO SURFACE STREAMS OR SENSITIVE FEATURES BY THE NEXT RAIN).
7. SEDIMENT MUST BE REMOVED FROM SEDIMENT TRAPS OR SEDIMENTATION PONDS NOT LATER THAN WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50%. A PERMANENT STAKE MUST BE PROVIDED THAT CAN INDICATE WHEN THE SEDIMENT OCCUPIES 50% OF THE BASIN VOLUME.
8. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORMWATER SHALL BE PREVENTED FROM BECOMING A POLLUTANT SOURCE FOR STORMWATER DISCHARGES (E.G., SCREENING OUTFALLS, PICKED UP DAILY).
9. ALL SPOILS (EXCAVATED MATERIAL) GENERATED FROM THE PROJECT SITE MUST BE STORED ON-SITE WITH PROPER E&S CONTROLS. FOR STORAGE OR DISPOSAL OF SPOILS AT ANOTHER SITE ON THE EDWARDS AQUIFER RECHARGE ZONE, THE OWNER OF THE SITE MUST RECEIVE APPROVAL OF A WATER POLLUTION ABATEMENT PLAN FOR THE PLACEMENT OF FILL MATERIAL OR MASS GRADING PRIOR TO THE PLACEMENT OF SPOILS AT THE OTHER SITE.
10. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. WHERE THE INITIATION OF STABILIZATION MEASURES BY THE 14TH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASE IS PRECLUDED BY WEATHER CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE. WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE IS TEMPORARILY CEASED, AND EARTH DISTURBING ACTIVITIES WILL BE RESUMED WITHIN 21 DAYS, TEMPORARY STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF SITE. IN AREAS EXPERIENCING DROUGHTS WHERE THE INITIATION OF STABILIZATION MEASURES BY THE 14TH DAY AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED IS PRECLUDED BY SEASONAL ARID CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE.
11. THE FOLLOWING RECORDS SHALL BE MAINTAINED AND MADE AVAILABLE TO THE TCEQ UPON REQUEST: THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR; THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE; AND THE DATES WHEN STABILIZATION MEASURES ARE INITIATED.
12. THE HOLDER OF ANY APPROVED EDWARDS AQUIFER PROTECTION PLAN MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE IN WRITING AND OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE FOLLOWING:
 - A. ANY PHYSICAL OR OPERATIONAL MODIFICATION OF ANY WATER POLLUTION ABATEMENT STRUCTURE(S), INCLUDING BUT NOT LIMITED TO PONDS, DAMS, BERMS, SEWAGE TREATMENT PLANTS, AND DIVERSIONARY STRUCTURES;
 - B. ANY CHANGE IN THE NATURE OR CHARACTER OF THE REGULATED ACTIVITY FROM THAT WHICH WAS ORIGINALLY APPROVED OR A CHANGE WHICH WOULD SIGNIFICANTLY IMPACT THE ABILITY OF THE PLAN TO PREVENT POLLUTION OF THE EDWARDS AQUIFER;
 - C. ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED AS UNDEVELOPED IN THE ORIGINAL WATER POLLUTION ABATEMENT PLAN.

AUSTIN REGIONAL OFFICE
2800 S. IH 35, SUITE 100
AUSTIN, TEXAS 78704-5712
PHONE (512) 339-2929
FAX (512) 339-3795

SAN ANTONIO REGIONAL OFFICE
14250 JUDDSON ROAD
SAN ANTONIO, TEXAS 78233-4480
PHONE (210) 490-3096
FAX (210) 545-4329

THESE GENERAL CONSTRUCTION NOTES MUST BE INCLUDED ON THE CONSTRUCTION PLANS PROVIDED TO THE CONTRACTOR AND ALL SUBCONTRACTORS.

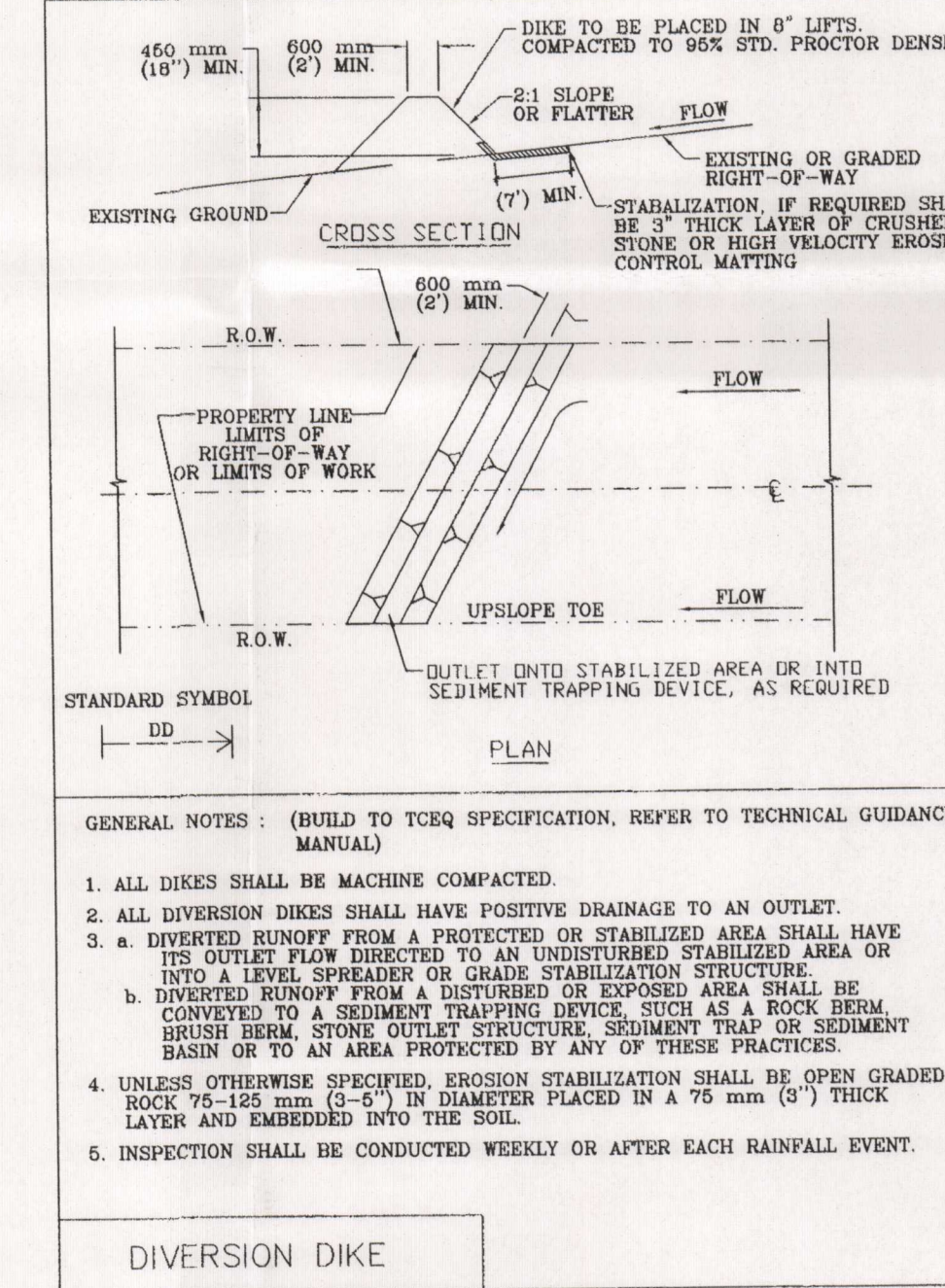
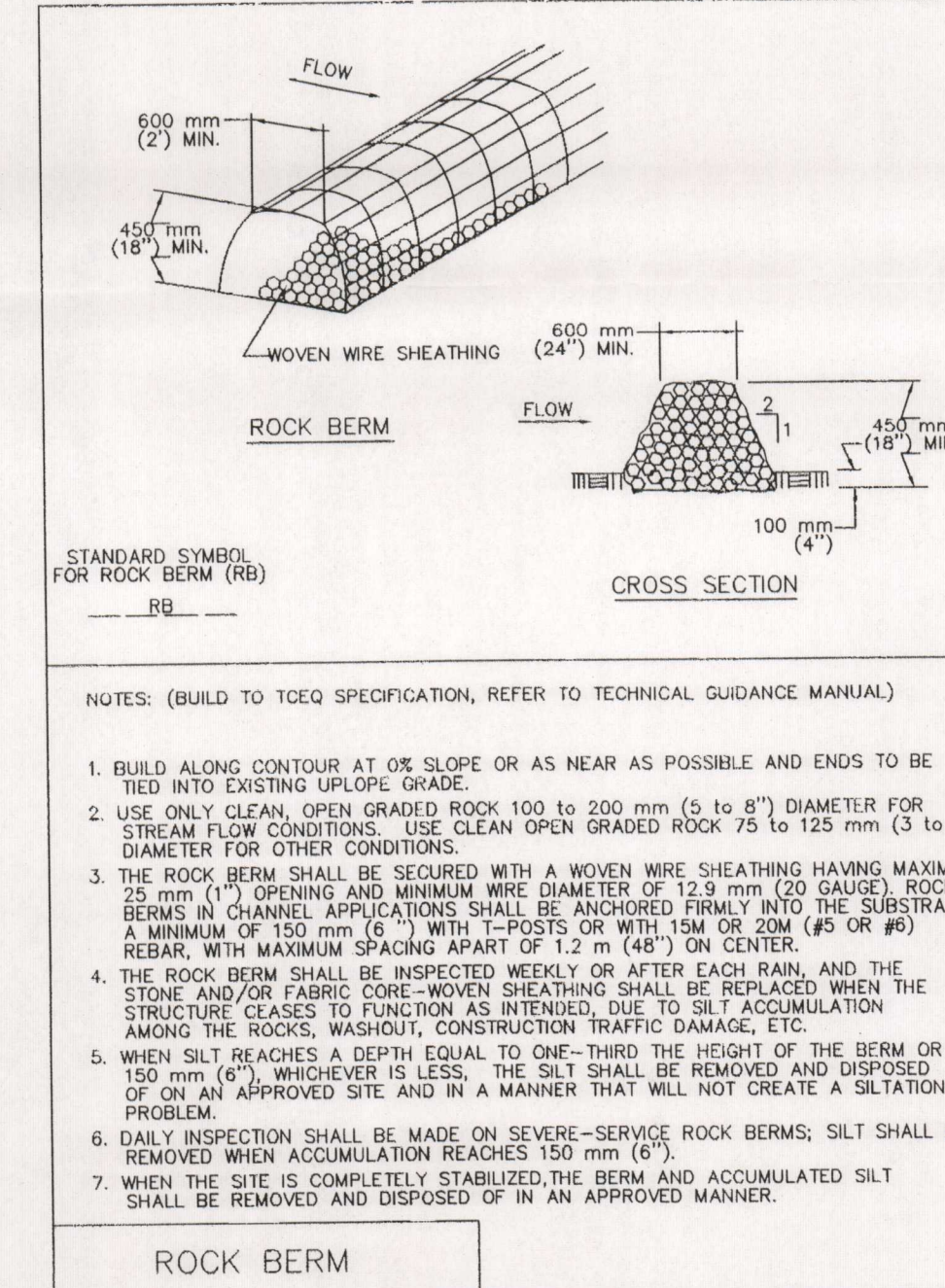
STABILIZATION / REVEGETATION NOTES

1. THE CONTRACTOR SHALL INSTALL EROSION/SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTIVE FENCING PRIOR TO ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR EXCAVATION).
2. THE PLACEMENT OF EROSION/SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE TCEQ TECHNICAL GUIDANCE MANUAL AND THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN.
3. THE PLACEMENT OF TREE/NATURAL AREA PROTECTIVE FENCING SHALL BE IN ACCORDANCE WITH THE CITY OF AUSTIN STANDARD NOTES FOR TREE AND NATURAL AREA PROTECTION AND THE APPROVED GRADING/TREE AND NATURAL AREA PLAN.
4. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD ON-SITE WITH THE CONTRACTOR, DESIGN ENGINEER/PERMIT APPLICANT AND ENVIRONMENTAL INSPECTOR AFTER INSTALLATION OF THE EROSION/SEDIMENTATION CONTROLS AND TREE/NATURAL AREA PROTECTION MEASURES AND PRIOR TO BEGINNING ANY SITE PREPARATION WORK.
5. ANY MAJOR VARIATION IN MATERIALS OR LOCATIONS OF CONTROLS OR FENCES FROM THOSE SHOWN ON THE APPROVED PLANS WILL REQUIRE A REVISION AND MUST BE APPROVED BY THE REVIEWING ENGINEER OR ENVIRONMENTAL SPECIALIST. MINOR CHANGES TO BE MADE AS FIELD REVISIONS TO THE EROSION AND SEDIMENTATION CONTROL PLAN MAY BE REQUIRED BY THE ENVIRONMENTAL INSPECTOR DURING THE COURSE OF CONSTRUCTION TO CORRECT CONTROL INADEQUACIES.
6. THE CONTRACTOR IS REQUIRED TO INSPECT THE CONTROLS AND FENCES AT WEEKLY INTERVALS AND AFTER SIGNIFICANT RAINFALL EVENTS TO INSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS TO DAMAGED AREAS. SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHES SIX (6) INCHES.
7. PRIOR TO FINAL ACCEPTANCE, HAUL ROADS AND WATERWAY CROSSINGS CONSTRUCTED FOR TEMPORARY CONTRACTOR ACCESS MUST BE REMOVED, ACCUMULATED SEDIMENT REMOVED FROM THE WATERWAY AND THE AREA RESTORED TO THE ORIGINAL GRADE AND REVEGETATED. ALL LAND CLEARING DEBRIS SHALL BE DISPOSED OF IN APPROVED SPOIL DISPOSAL SITES.
8. ALL WORK MUST STOP IF A VOID IN THE ROCK SUBSTRATE IS DISCOVERED WHICH IS: ONE SQUARE FOOT IN TOTAL AREA; BLOWS AIR FROM WITHIN THE SUBSTRATE AND/OR CONSISTENTLY RECEIVES WATER DURING ANY RAIN EVENT. AT THIS TIME IT IS THE RESPONSIBILITY OF THE PROJECT MANAGER TO IMMEDIATELY CONTACT A TCEQ INSPECTOR FOR FURTHER INVESTIGATION. PERMANENT EROSION CONTROL: ALL DISTURBED AREAS SHALL BE RESTORED AS NOTED BELOW.
 - A. A MINIMUM OF FOUR INCHES OF TOPSOIL SHALL BE PLACED IN ALL DRAINAGE CHANNELS (EXCEPT ROCK) AND BETWEEN THE CURB AND RIGHT-OF-WAY LINE.
 - B. RESEEDING SHALL IMMEDIATELY FOLLOW TOP SOILING WITH THE FOLLOWING MIXTURE OF GRASSES AT THE FOLLOWING RATES OF APPLICATION:

GRASS TYPE	RATE (LBS/ACRE)
BLUE GRAMA	5.0
TREATED "TOP GUN" BUFFALO GRASS	10.0
TEXAS BLUEBONNETS	4.0
PRairie VERBENAS	0.5
GREENTHREAD	1.0
PLAINS COREOPSIS	0.5
TOTAL SEEDING RATE*	21.0

* PERENNIAL RYE GRASS TO BE ADDED TO THE DESCRIBED MIX AT A RATE OF 10 LBS/ACRE WHEN SEEDING BETWEEN OCTOBER 1 AND MARCH 31.
 - C. FERTILIZER SHALL BE A PELLETTED OR GRANULAR SLOW RELEASE WITH AN ANALYSIS OF 15-15-15 TO BE APPLIED ONCE AT PLANTING AND ONCE DURING THE PERIOD OF ESTABLISHMENT AT A RATE OF 1 POUND PER 1000 SF.
 - D. FERTILIZER SHALL BE A WATER SOLUBLE FERTILIZER WITH AN ANALYSIS OF 15-15-15 AT A RATE OF 1.5 POUNDS PER 1000 SF.
 - E. MULCH TYPE USED SHALL BE HAY, STRAW OR MULCH APPLIED AT A RATE OF 45 POUNDS PER 1000 SF, WITH SOIL TACKIFIER AT A RATE OF 1.4 POUNDS PER 1000 SF.
 - F. THE PLANTED AREA SHALL BE IRRIGATED OR SPRINKLED IN A MANNER THAT WILL NOT ERODE THE TOPSOIL, BUT WILL SUFFICIENTLY SOAK THE SOIL TO A DEPTH OF SIX INCHES. THE IRRIGATION SHALL OCCUR AT TEN-DAY INTERVALS DURING THE FIRST TWO MONTHS RAINFALL OCCURRENCES OF ½ INCH OR MORE SHALL POSTPONE THE WATERING SCHEDULE FOR ONE WEEK.
 - G. RESTORATION SHALL BE ACCEPTABLE WHEN THE GRASS HAS GROWN AT LEAST 1½ INCHES HIGH WITH 95% COVERAGE, PROVIDED NO BARE SPOTS LARGER THAN 16 SQUARE FEET EXIST.
 - H. WHEN REQUIRED, NATIVE GRASS SEEDING SHALL COMPLY WITH REQUIREMENTS OF THE CITY OF AUSTIN ENVIRONMENTAL CRITERIA MANUAL.
9. ANNUAL GRASSES SUCH AS RYE GRASS WILL NOT BE ACCEPTED AS PERMANENT VEGETATION
10. ALL DISTURBED AREAS TO BE STABILIZED BY VEGETATION OR STRUCTURE.
11. DEVELOPER INFORMATION:

OWNER:	OWNER'S REPRESENTATIVE RESPONSIBLE FOR PLAN ALTERATIONS:
DH/JB PARTNERSHIP, LTD. 13000 U.S. HWY. 290 WEST AUSTIN, TEXAS 78737 512-384-0635	LOOMIS AUSTIN, INC. 3103 BEE CREEK ROAD #225 AUSTIN, TEXAS 78746 512-327-1180



JOHNSON RANCH
PHASE 1A
EROSION/SEDIMENTATION
CONTROL NOTES & DETAILS

DESIGNED BY: C.E.
DRAWN BY: N.T.
CHECKED BY: C.E.
APPROVED BY: C.E.
DATE: AUGUST 9, 2007

RECEIVED TCEQ
SAN ANTONIO
REGION

DEC 04 2007
COUNTY ENGINEER

SHEET NO. 6

Buddy Garcia, *Chairman*
Larry R. Soward, *Commissioner*
Bryan W. Shaw, Ph.D., *Commissioner*
Glenn Shankle, *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

April 9, 2008

RECEIVED
APR 14 2008
COUNTY ENGINEER

Mr. Thomas H. Hornseth, P.E.
Comal County Engineer
195 David Jonas Drive
New Braunfels TX 78132-3710

Re: Edwards Aquifer, Comal County
PROJECT NAME: Johnson Ranch, located on the northeast corner of Highway 281 and FM 1863, Bulverde, Texas
PLAN TYPE: Application for Approval of a Sewage Collection System Plan (SCS) 30 Texas Administration Code (TAC) Chapter 213; Edwards Aquifer Protection Program
EAPP File Number: 2702.01

Dear Mr. Hornseth:

The enclosed WPAP application received on April 9, 2008, is being forwarded to you pursuant to the Edwards Aquifer Rules. The Texas Commission on Environmental Quality (TCEQ) is required by 30 TAC Chapter 213 to provide copies of all applications to affected incorporated cities and underground water conservation districts for their comments prior to TCEQ approval.

Please forward your comments to this office by May 8, 2008.

The Texas Commission on Environmental Quality appreciates your assistance in this matter and your compliance efforts to ensure protection of the State's environment. If you or members of your staff have any questions regarding these matters, please feel free to contact the San Antonio Region Office at (210) 490-3096.

Sincerely

A handwritten signature in black ink, appearing to read "Lynn M. Bumgardner".

Lynn M. Bumgardner
Water Section Work Leader
San Antonio Regional Office

A small handwritten mark or signature, possibly a stylized "L" or "M", located next to the typed name of Lynn M. Bumgardner.

LMB/eg

Lift Station/force Main System Application
for Regulated Activities
On the Edwards Aquifer Recharge Zone
and Relating to 30 TAC §213.5(c)(3)(B)and(c), Effective June 1, 1999

REGULATED ENTITY NAME: Johnson Ranch Phase 1

CUSTOMER INFORMATION (if different than customer information provided on core data form)

1. The person(s) responsible for providing the engineering **certification** to the TCEQ pursuant to 30 TAC §213.5(f)(2)(C) during construction and 30 TAC §213.5 (c)(3)(D) upon completion of construction is:

Contact Person: Charles W. Kaough, P.E.
Entity: Loomis Austin Inc.
Mailing Address: 3101 Bee Cave Rd., Suite 100
City, State: Austin, TX Zip: 78746
Telephone: (512) 327-1180 Fax: (512) 327-4062

2. The engineer responsible for the **design** of this lift station and force main:

Contact Person: Charles W. Kaough, P.E.
Entity: Loomis Austin Inc.
Mailing Address: 3101 Bee Cave Rd., Suite 100
City, State: Austin, TX Zip: 78746
Telephone: (512) 327-1180 Fax: (512) 327-4062

Texas Licensed Professional Engineer's Serial Number: 90191

PROJECT DESCRIPTION

3. This project is for the construction or replacement of:

☐ Lift Station only.
☐ Lift Station and Force Main system.
☒ Lift Station, Force Main, and Gravity system.

4. The following existing/proposed (circle one) wastewater treatment plant (WWTP) Johnson Ranch WWTP (name) will receive project wastewater for treatment and disposal.

5. All components of this lift station/force main system will comply with:

☒ The City of Austin standard specifications. **(as amended by project Special Conditions)**
☐ Other. Specifications are provided directly behind this page.

SITE PLAN

Items 6 through 13 must be included on the Site Plan.

6. The Site Plan must have a minimum scale of 1" = 400'.
Site Plan Scale: 1" = 200 '.
7. Lift station/force main system layout shall meet all requirements of 30 TAC §213.5(c)(3)(B) and(C), and 30 TAC Chapter 317.
8. Geologic or Manmade Features:
- ☒ No geologic or manmade features were identified in the Geologic Assessment.
- ☐ All geologic or manmade features identified in the Geologic Assessment (caves, solution openings, sinkholes, fractures, joints, porous zones, etc.) which exist at the site of the proposed lift station and along the path(s) or within **50 feet of each side** of a proposed force main line are shown on the Site Plan and are listed in the table below. Designs used to protect the integrity of the sewer line crossing each feature are described and labeled on the attached page. A detailed design drawing for each feature is shown on Plan Sheet of .
- ☐ No Geologic Assessment is required for this project.

Line	Station		Station	Type of Feature
		to		
		to		
		to		
		to		
		to		
		to		
		to		
		to		

9. ☒ Existing topographic contours are shown and labeled. The contour interval is 1 feet. (Contour interval must not be greater than 5 feet).

10. ☒ Finished topographic contours are shown and labeled. The contour interval is 1 feet. (Contour interval must not be greater than 5 feet).
☐ Finished topographic contours will not differ from the existing topographic configuration and are not shown.

11. 100-year floodplain boundaries

- ☐ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.
☒ No part of the project site is located within the 100-year floodplain.

The 100-year floodplain boundaries are based on the following **specific** (including date of material) sources(s):

12. 5-year floodplain:

- ☒ After construction is complete, no part of this project will be in or cross a 5-year floodplain, either naturally occurring or manmade. (Do not include streets or concrete-lined channels constructed above sewer lines.)
☐ After construction is complete, all sections of the force main located within the 5-year floodplain will be encased in concrete or capped with concrete. These locations are listed in the table below and are shown and labeled on the Site Plan. (Do not include streets or concrete-lined channels constructed above sewer lines.)

Line	Sheet	Station		Station
	of		to	
	of		to	
	of		to	
	of		to	

13. All known wells (oil, water, unplugged, capped and/or abandoned, test holes, etc.):

- _____ There are _____ (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply)
- _____ The wells are not in use and have been properly abandoned.
- _____ The wells are not in use and will be properly abandoned.
- _____ The wells are in use and comply with 30 TAC §238.
- ✓ _____ There are no wells or test holes of any kind known to exist on the project site.

PLAN AND PROFILE SHEETS. The construction drawings and technical specifications will not be considered for review unless they are the **final plans and technical specifications** which will be used by the contractor for bidding and construction.

Items 14 through 17 must be included on the Plan and Profile sheets.

14. The equipment installation construction plans must have a minimum scale of 1" = 10'.
Plan sheet scale: 1" = 2 '.
15. ✓ _____ Locations, descriptions and elevations of all required equipment and piping for the lift station and force main are shown and labeled.
16. N/A Air Release/Vacuum Valves will be provided at all peaks in elevation of the proposed force main. These locations are listed in the table below and labeled on the appropriate plan and profile sheets.

Line	Station	Sheet
		of
		of
		of
		of
		of
		of

17. ✓ _____ The **final plans and technical specifications** are submitted for the TCEQ's review. Each sheet of the construction plans and specifications are dated, signed, and sealed by the Texas

Licensed Professional Engineer responsible for the design on each sheet.

ENGINEERING DESIGN REPORT

18. **ATTACHMENT A - Engineering Design Report.** An engineering design report with the following required items is included with this application:

Report p.1 The report is dated, signed, and sealed by a Texas Licensed Professional Engineer.

Appendix A p.1-5 Calculations for sizing system (including emergency provisions).

Appendix A, B p.17 Pump curves, system curves, and head loss calculations including minimum and maximum static head for C values of 100 and 140.

Report p.2 100-year and 25-year flood considerations.

Appendix A p.1 Total lift station pumping capacity with the largest pump out of service.

Report p.1 Type of pumps, including standby units.

Appendix B p.16 Type of pump controllers, ~~including standby air supply for bubbler controllers.~~

Appendix A p.1 Pump cycle time.

Appendix B p.16 Type of wet well ventilation, include number of air changes for mechanical ventilation.

Appendix A p.2 Minimum and maximum flow velocities for the Force Main.

ADMINISTRATIVE INFORMATION

19. ☒ Upon completion of the wet well excavation, a geologist must certify that the excavation was inspected for the presence of sensitive features and that the certification must be submitted to the appropriate regional office.
20. ☒ All General Construction Notes for Lift Stations and Force Mains in the "NOTES-LS.FM" file are included on the General Notes Sheet of the Final Construction Plans for the lift station and/or force main system.
21. ☒ One (1) original and three (3) copies of the completed application has been provided.

22. ☒ Any modification of this SCS application will require TCEQ approval, prior to construction, and may require submission of a revised application, with appropriate fees.

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **LIFT STATION/FORCE MAIN SYSTEM APPLICATION FORM** is hereby submitted for TCEQ review and executive director approval. The system was designed in accordance with the requirements of 30 TAC §213.5(c)(3)(C) and 30 TAC Chapter 317, and prepared by:

Place engineer's seal here:



Print Name of Licensed Professional Engineer

Charles W. Kaough
Signature of Licensed Professional Engineer

August 4, 2008

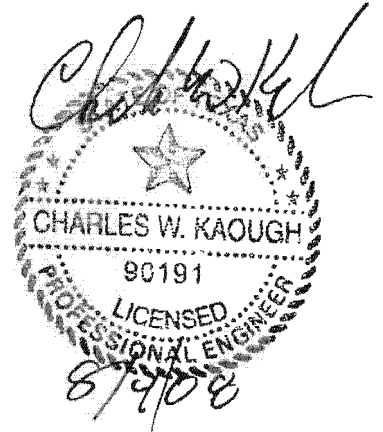
Date

If you have questions on how to fill out this form or about the Edwards Aquifer protection program, please contact us at 210/490-3096 for projects located in the San Antonio Region or 512/339-2929 for projects located in the Austin Region.

Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512/239-3282.

LOOMIS AUSTIN

ENGINEERING, LAND SURVEYING &
ENVIRONMENTAL CONSULTING



August 5, 2008

Johnson Ranch Phase 1 Liftstation Engineering Design Report

Introduction

The lift station for Johnson Ranch Phase 1, that is to be maintained and operated by the Guadalupe-Blanco River Authority (GBRA), is designed to service 294 LUE's, which is the total calculation for approximated ultimate build out conditions (Phases 1 and 2 of Johnson Ranch). The liftstation has been designed to comply with TAC Title 30, Chapter 317.

Wet Well/Pump & Force Main Design

An average daily flow of 275 gpd/lue was used in calculations to determine dry weather average and dry weather peak flows.

Wet well design capacities are as follows: A working volume of two feet (752 gallons) was chosen for the 8 foot diameter wet well to accommodate pump cycling times. Alarm and maximum storage elevations of 7 feet (2,632 gallons) and 16.7 feet (6,279 gallons), respectively, were also incorporated in this design. Please see attached exhibits in Appendix A, page 1 for wet well design calculations. The normal operating and alarm levels for the wet well are shown on Appendix B, Sheet 16, Section A.

Wet well ventilation is provided by a 4" gooseneck vent pipe (illustrated on Sheet 16) designed to prevent entry of insects or birds.

The pumps chosen to service the lift station for Johnson Ranch 1 are Hydromatic Submersible Grinder Pump model H4H/H4HX-1000 type NCLOG6-4. Pump curves for this design can be viewed in attached Appendix B, Sheet 16. There will be two identical pumps each with a pumping capacity of 317 gpm. The pumps will be controlled by a pressure transducer and mercury switch floats. Pump cycle times range from 11.0 minutes to 16.5 minutes as shown in Appendix A, page 1.

Minimum and maximum flow velocities in the six inch force main are 3.3 and 3.6 feet per second, respectively. The calculations are shown in Appendix A, page 2.

Maintenance access to the wet well will be provided by the double door wet well hatch and the pumps will be installed on stainless steel sliders for hoisting out of the wet well with a Davit crane mounted on the wet well.

Electrical/ Emergency Design

The electrical plans, Sheet E0 to E6, show the control system design and audio/visual alarm system, including the autodial telemetry system. The audio/visual alarm system triggered by high water level alarm, power outage or pump failure includes a red flashing light and horn.

Emergency secondary power is provided by an on-site automatic starting 40 KW natural gas generator. The generator will be seated in an emergency spill containment pan to protect from spills, as shown in the construction plans, Appendix B, Sheet 15, E1 & E5.

A Portable Pump Connection, shown on Sheet 16, is available for emergency conditions for pumping with a portable emergency pump into the force main if the wet well pumps were to be inoperable.

A controlled access security fence, approximately 7 feet tall, will enclose the liftstation site with a 10 foot wide gate with locking equipment, as shown on Appendix B, Sheet 15 (See Fence Notes and Security Fence Detail).

The lift station pad has been located and graded so that the elevations of the liftstation pad are above the 100-year floodplain and 25-year floodplain. The 100-year floodplain elevation is approximately 1023 feet and the liftstation site is grade set at minimum of 1024 feet.

Lift Station Design Calculations

Client Name: DHJB
Project Name: Johnson Ranch Phase 1

Project No.: 070713
Design Date: August 2008

Design Flow Calculations:

294 total # of LUE's

Average Daily Flow = 275 gal/day/LUE
Dry weather avg flow = 56 gpm City of Bulverde formula
Dry weather peak flow = 217 gpm City of Bulverde peaking formula

Inflow and Infiltration = 100 gal/day/inch diameter-mile
(Metcalf & Eddy's)
Inch-Diameter Mile = 3.79 in-mile

Wet Weather Inflow and Infiltration = 379 gals/day
= 0.3 gals/min.

Wet Weather Peak Flow = 217 gals/min.

Wet Well Design Calculations:

OLD CONDITION CYCLE TIMES (design for ultimate conditions)
Enter pump capacity = 295 gal/min.
Peak inflow = 217 gals/min
78 net outflow in gallons per minute
Average inflow = 56 gals/min
239 net outflow in gallons per minute

8' Dia. Well: 376.0 gals/foot of depth

Depth to 1st "on" stage	Working Volume (gal.)	Time to Pump Down		Time to Fill Wet Well		Total Cycle Time*		*Pump Cycle Time
		Avg Flow (min.)	Peak Flow (min.)	Avg Flow (min.)	Peak Flow (min.)	Avg Flow (min.)	Peak Flow (min.)	
1	376.0	1.6	4.8	6.7	1.7	8.3	6.5	
1.5	564.0	2.4	7.2	10.0	2.6	12.4	9.8	
2	752.0	3.1	9.6	13.4	3.5	16.5	13.1	
3	1128.0	4.7	14.4	20.1	5.2	24.8	19.6	
4	1503.9	6.3	19.2	26.8	6.9	33.1	26.2	

Denotes chosen wet well and depth

NEW CONDITION CYCLE TIMES
Enter pump capacity = 317 gal/min.
Peak inflow = 217 gals/min
100 net outflow in gallons per minute
Average inflow = 56 gals/min
261 net outflow in gallons per minute

Depth to 1st "on" stage	Working Volume (gal.)	Time to Pump Down		Time to Fill Wet Well		Total Cycle Time	
		Avg Flow (min.)	Peak Flow (min.)	Avg Flow (min.)	Peak Flow (min.)	Avg Flow (min.)	Peak Flow (min.)
1	376.0	1.4	3.8	6.7	1.7	8.1	5.5
1.5	564.0	2.2	5.6	10.0	2.6	12.2	8.2
2	752.0	2.9	7.5	13.4	3.5	16.3	11.0
3	1128.0	4.3	11.3	20.1	5.2	24.4	16.5
4	1503.9	5.8	15.0	26.8	6.9	32.6	22.0

Denotes chosen wet well and depth

Loomis Austin, Inc.
Johnson Ranch 1A Lift Station

Elevation Head:

Slab el. =	1024.5	MSL	
	1024.5	MSL	= Max. Emergency Storage el.
	1010.54	MSL	= Alarm el.
Lowest Inv. (In) =	1010.54	MSL	
	1009.54	MSL	= 2nd Pump "on" el.
	1008.54	MSL	= 1st Pump "on" el.
	Working Volume Range = 2 feet		
Pumps off el. =	1006.54	MSL	or 1006.54 = Lowest elevation of FM (if < WW inv.)
Wet Well inv. el. =	1003.54	MSL	
			= 15.96 feet from 1st "on" stage to slab
FM high pt elev =	1050	MSL	
			= 43.46 feet of elevation head *STATIC HEAD

New Force Main Total Dynamic Head Calculations:

Discharge Pipe:	25	Linear Feet	
roughness, c =	140		Material: DI
diameter, d =	6	inches	
flow, q (gpm) =	300	(pumping capacity)	
$f = 0.2083 \times \frac{(100/c)^{1.85}}{d^{4.8655}} \times \frac{q^{1.85}}{d^{4.8655}}$			
f =	0.70	feet/100 ft of pipe	Flow Velocity, v = 3.4 fps Okay.
Total Friction Loss =	0.2	feet	(3 to 6 fps is ok)

Minor Losses in Discharge Pipe:

HL =	$\frac{K \times V^2}{2g}$	where :	K= 0.9 for 90 deg. bends
			K= 0.5 for 45 deg. bends
			K= 0.3 for 22.5 deg. bends
Number of 90 deg. bends =	4		K= 2.5 for Swing Check Valve, open full
Number of 45 deg. bends =	0		K= 0.2 for Gate Valve, open full
Number of 22.5 deg. bends =	0		
Number of Swing CVs =	1		
Number of Gate Valves =	1		
Total Minor Losses =	1.1	feet	

New Force Main:	2550	Linear Feet	
roughness, c =	140		Material: PVC
diameter, d =	6	inches	
flow, q (gpm) =	300	(pumping capacity)	
$f = 0.2083 \times \frac{(100/c)^{1.85}}{d^{4.8655}} \times \frac{q^{1.85}}{d^{4.8655}}$			
f =	0.70	feet/100 ft of pipe	Velocity, v = 3.4 fps Okay.
Total Friction Loss =	17.8	feet	(3 to 6 fps is ok)

Minor Losses in Force Main:

HL =	$\frac{K \times V^2}{2g}$	where :	K= 0.9 for 90 deg. bends
			K= 0.5 for 45 deg. bends
			K= 0.3 for 22.5 deg. bends
Number of 90 deg. bends =	0		K= 2.5 for Swing Check Valve, open full
Number of 45 deg. bends =	6		K= 0.2 for Gate Valve, open full
Number of 22.5 deg. bends =	2		
Number of Swing CVs =	1		
Number of Gate Valves =	5		
Total Minor Losses =	1.3	feet	

SUMMARY OF HEAD LOSSES:

(New Pipe, Pump "on" setting)	
Force Main Friction Loss =	17.8
Force Main Minor Losses =	1.3
Discharge Pipe Friction Loss =	0.2
Discharge Pipe Minor Losses =	1.1
Pump "on" Elevation Head =	41.46
Total Dynamic Head, TDH	61.9 feet

Old Force Main Total Dynamic Head Calculations:

Discharge Pipe:	25	Linear Feet	
roughness, c =	110		Material: DI
diameter, d =	6	inches	
flow, q (gpm) =	260	(pumping capacity)	
$f = 0.2083 \times \frac{(100/c)^{1.85}}{d^{4.8655}} \times \frac{q^{1.85}}{d^{4.8655}}$			
f =	1.00	feet/100 ft of pipe	Flow Velocity, v = 3.0 fps
Total Friction Loss =	0.3	feet	(3 to 6 fps is ok)

Minor Losses in Discharge Pipe:

HL =	$\frac{K \times V^2}{2g}$	where :	K= 0.9 for 90 deg. bends
			K= 0.5 for 45 deg. bends
			K= 0.3 for 22.5 deg. bends
Number of 90 deg. bends =	4		K= 2.5 for Swing Check Valve, open full
Number of 45 deg. bends =	0		K= 0.2 for Gate Valve, open full
Number of 22.5 deg. bends =	0		
Number of Swing CVs =	1		
Number of Gate Valves =	1		
Total Minor Losses =	0.9	feet	

Old Force Main:	2550	Linear Feet	
roughness, c =	110		Material: PVC
diameter, d =	6	inches	
flow, q (gpm) =	260	(pumping capacity)	
$f = 0.2083 \times \frac{(100/c)^{1.85}}{d^{4.8655}} \times \frac{q^{1.85}}{d^{4.8655}}$			
f =	1.00	feet/100 ft of pipe	Velocity, v = 3.0 fps
Total Friction Loss =	25.5	feet	(3 to 6 fps is ok)

Minor Losses in Force Main:

HL =	$\frac{K \times V^2}{2g}$	where :	K= 0.9 for 90 deg. bends
			K= 0.5 for 45 deg. bends
			K= 0.3 for 22.5 deg. bends
Number of 90 deg. bends =	0		K= 2.5 for Swing Check Valve, open full
Number of 45 deg. bends =	6		K= 0.2 for Gate Valve, open full
Number of 22.5 deg. bends =	2		
Number of Swing CVs =	1		
Number of Gate Valves =	5		
Total Minor Losses =	1.0	feet	

SUMMARY OF HEAD LOSSES:

(Old Pipe, Pump "off" setting)	
Force Main Friction Loss =	25.5
Force Main Minor Losses =	1.0
Discharge Pipe Friction Loss =	0.3
Discharge Pipe Minor Losses =	0.9
Pump "off" Elevation Head =	43.46
Total Dynamic Head, TDH	71.0 feet

Loomis Austin, Inc.
Johnson Ranch 1A Lift Station

System Head Loss Curves*:

Roughness Coefficient, C= 140

New Pipe

Pumping Cap. (gpm)	Velocity (fps)	Force Main Losses (ft)	FM Minor Losses (ft)	Discharge Pipe Losses (ft)	Discharge Minor Losses (ft)	Elevation Head (ft)	TDH C=140
225	2.55	10.48	0.72	0.10	0.64	43.46	55.40
240	2.72	11.81	0.82	0.12	0.73	43.46	56.93
255	2.89	13.21	0.92	0.13	0.82	43.46	58.54
270	3.06	14.68	1.03	0.14	0.92	43.46	60.24
285	3.23	16.23	1.15	0.16	1.02	43.46	62.02
300	3.40	17.84	1.28	0.17	1.13	43.46	63.89
315	3.57	19.53	1.41	0.19	1.25	43.46	65.84
330	3.74	21.28	1.55	0.21	1.37	43.46	67.87
345	3.92	23.11	1.69	0.23	1.50	43.46	69.98
360	4.09	25.00	1.84	0.25	1.63	43.46	72.18
375	4.26	26.96	2.00	0.26	1.77	43.46	74.45

15 Enter Step Value

Roughness Coefficient, C= 100

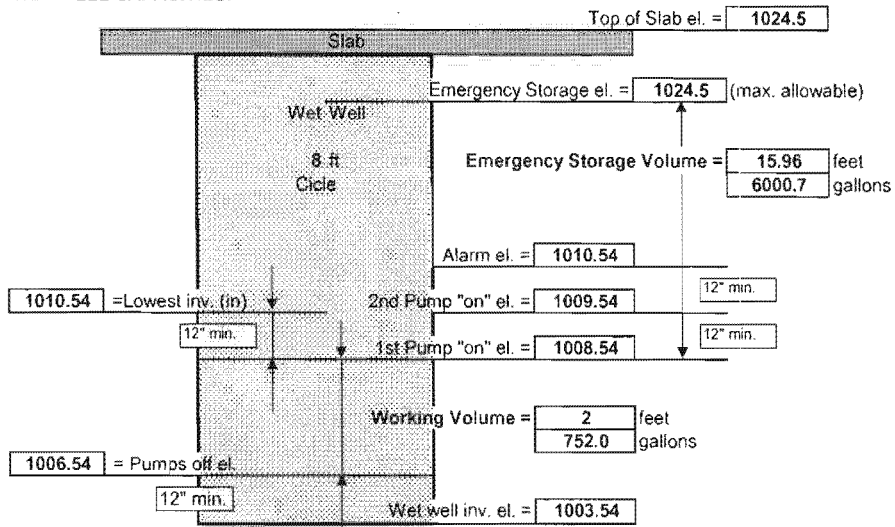
Old Pipe

Pumping Cap. (gpm)	Velocity (fps)	Force Main Losses (ft)	FM Minor Losses (ft)	Discharge Pipe Losses (ft)	Discharge Minor Losses (ft)	Elevation Head (ft)	TDH C=100
185	2.10	13.60	0.49	0.13	0.43	43.46	58.11
200	2.27	15.71	0.57	0.15	0.50	43.46	60.39
215	2.44	17.95	0.66	0.18	0.58	43.46	62.83
230	2.61	20.34	0.75	0.20	0.67	43.46	65.42
245	2.78	22.86	0.85	0.22	0.76	43.46	68.15
260	2.95	25.52	0.96	0.25	0.85	43.46	71.04
275	3.12	28.31	1.07	0.28	0.95	43.46	74.07
290	3.29	31.23	1.19	0.31	1.06	43.46	77.25
305	3.46	34.28	1.32	0.34	1.17	43.46	80.57
320	3.63	37.47	1.45	0.37	1.29	43.46	84.04
335	3.80	40.78	1.59	0.40	1.41	43.46	87.65

15 Enter Step Value

Loomis Austin, Inc.
Johnson Ranch 1A Lift Station

Schematic Diagram:
WET WELL CAPACITIES:



EMERGENCY STORAGE PROVISIONS:

Wet Well Size = 8 feet diameter

Max. Allowable Storage Elev. = 1024.5 MSL

Depth used for Storage = 15.96 feet (1st Pump "on" to the maximum allowable elev.)

Wet Well Storage Volume = 6000.7 gallons

Additional Storage Tank Size = 0 feet in diameter

Inflow Elev. = 0 MSL

Outflow/Bottom Elev. = 0 MSL

Additional Storage Tank Volume = 0.0 gallons

Incoming Gravity Line Size = 8 inches

Gravity Line Storage Length = 0 feet

Gravity Line Storage Volume = 0.0 gallons

Incoming Gravity Line Size = 8 inches

Gravity Line Storage Length = 0 feet

Gravity Line Storage Volume = 0.0 gallons

Manhole Diameter = 4 feet

Accumulated MH depth used for Storage = 1.0 Vertical feet

Manhole Storage Volume = 94.0 gallons

Total Storage Volume = 6094.7 gallons

Using an avg inflow of 56 gpm, Storage Duration = 109 minutes

Using a peak inflow of 217 gpm, Storage Duration = 28 minutes

Loomis Austin, Inc.
Johnson Ranch 1A Lift Station

Force Main Flush Time

$$T_{\text{flush}} = \frac{(t_f + t_e) \times \text{Length of Force Main}}{(Ct/2) \times V_{\text{fm}} \times 60 \text{ sec/min}}$$

$$t_f = V / i$$

t_f = time to fill wet well

$$t_e = V / (q-i)$$

t_e = time to empty wet well

V = volume of wet well between pump "on" & "off"

$$V = 752.0 \text{ gallons}$$

$$t_f = 13.4 \text{ min}$$

i = average dry weather flow = F

$$F = 56 \text{ gal/min}$$

$$t_e = 3.1 \text{ min}$$

q = pump capacity

$$q = 295 \text{ gal/min}$$

$$Ct = 16.5 \text{ min}$$

$$V_{\text{fm}} = 3.4 \text{ fps}$$

$$T_{\text{flush}} = 25.0 \text{ min} \quad \text{if } T_{\text{flush}} < 30 \text{ min., No odor control is required.}$$

Odor control is not recommended required.

Water Hammer Calculations:

6" C900 PVC Pipe

$$\text{Water hammer pressure, } p = \frac{(a) \times (v)}{2.31 \times (g)}$$

$$a = \frac{4660}{[1 + ((k \cdot d) / (E \cdot t))]^{0.5}}$$

a = pressure wave velocity (fps)

g = acceleration of gravity (32.2 ft/sec²)

k = bulk modulus of water (300,000 psi)

d = inside diameter of pipe (inches)

E = Young's modulus of pipe (psi)

t = pipe wall thickness (inches)

v = flow velocity of pipe (fps)

operating pressure = TDH in psi

where:

$$d = 6 \text{ inches}$$

$$E = 400,000 \text{ psi}$$

$$t = 0.167 \text{ inches} \quad 6" \text{ C900 PVC}$$

$$v = 3.40 \text{ fps}$$

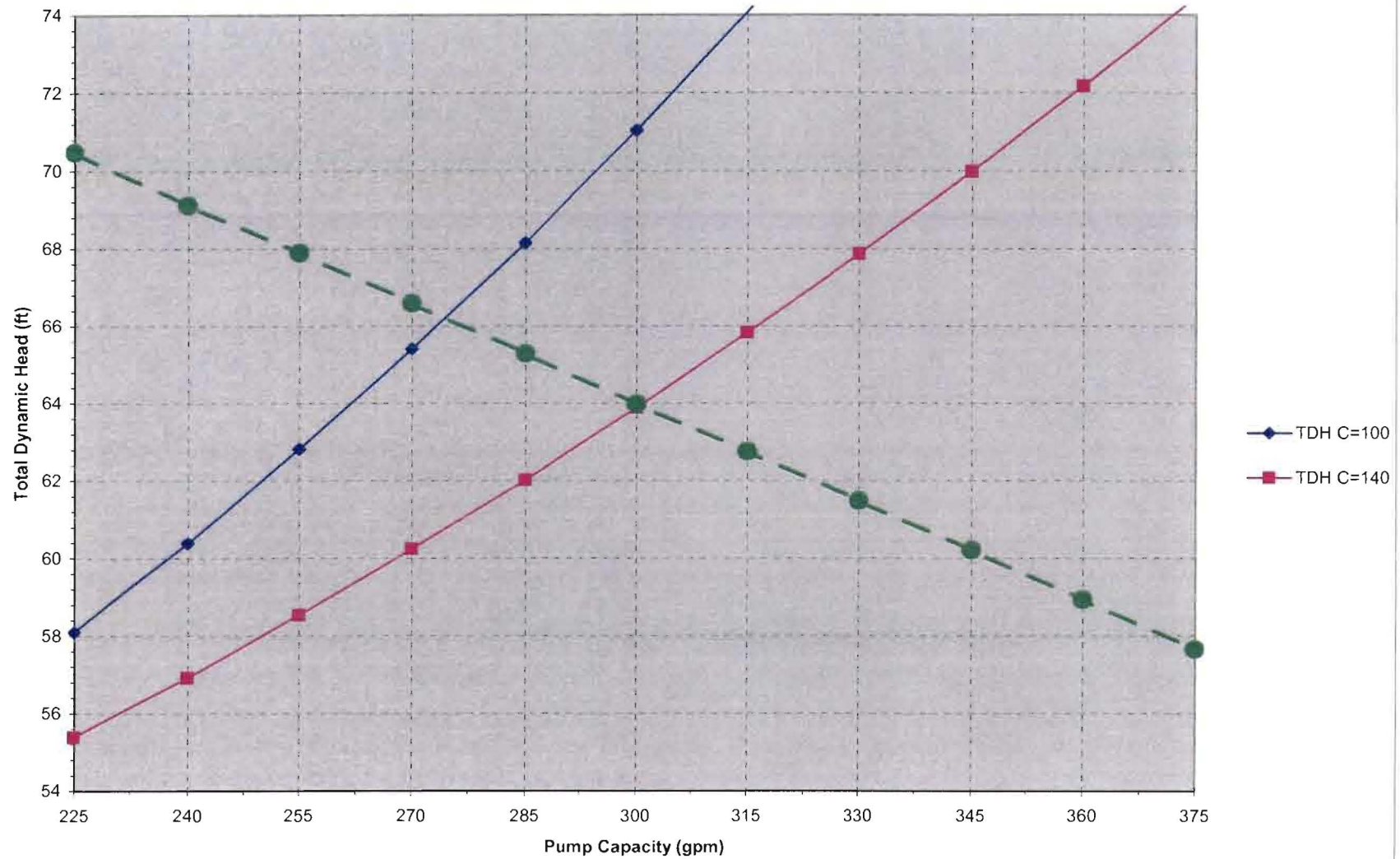
$$a = 882 \text{ fps}$$

$$p = 40.3 \text{ psi} \quad \text{Okay.}$$

For PVC Pipe, rated working stress = 150 psi

Johnson Ranch Phase 1 Lift Station

System Curve
Hydromatic H4H/H4HX-1000, 1750 RPM, 9" impeller



APPENDIX A

Lift Station Design Calculations

Client Name: DHUE
Project Name: Johnson Ranch Phase 1

Project No.: 070713
Design Date: August 2008

Design Flow Calculations:

294 total # of LUE's

Average Daily Flow = 275 gal/day/LUE
Dry weather avg flow = 56 gpm City of Bulverde formula
Dry weather peak flow = 217 gpm City of Bulverde peaking formula

Inflow and Infiltration = 100 gal/day/inch diameter-mile
(Metcalf & Eddy's)
Inch-Diameter Mile = 3.79 in-mile

Wet Weather Inflow and Infiltration = 379 gals/day
= 0.3 gals/min.

Wet Weather Peak Flow = 217 gals/min

Wet Well Design Calculations:

OLD CONDITION CYCLE TIMES *(design for ultimate conditions)

Enter pump capacity = 295 gal/min.
Peak inflow = 217 gals/min
78 net outflow in gallons per minute
Average inflow = 56 gals/min
239 net outflow in gallons per minute

8' Dia. Well:

376.0 gals/foot of depth

Depth to 1st "on" stage	Working Volume (gal.)	Time to Pump Down		Time to Fill Wet Well		Total Cycle Time*	
		Avg Flow (min.)	Peak Flow (min.)	Avg Flow (min.)	Peak Flow (min.)	Avg Flow (min.)	Peak Flow (min.)
1	376.0	1.6	4.8	6.7	1.7	8.3	6.5
1.5	564.0	2.4	7.2	10.0	2.6	12.4	9.8
2	752.0	3.1	9.6	13.4	3.5	16.5	13.1
3	1128.0	4.7	14.4	20.1	5.2	24.8	19.6
4	1503.9	6.3	19.2	26.8	6.9	33.1	26.2

*Pump Cycle Time

Denotes chosen wet well and depth

NEW CONDITION CYCLE TIMES

Enter pump capacity = 317 gal/min.
Peak inflow = 217 gals/min
100 net outflow in gallons per minute
Average inflow = 56 gals/min
261 net outflow in gallons per minute

Depth to 1st "on" stage	Working Volume (gal.)	Time to Pump Down		Time to Fill Wet Well		Total Cycle Time	
		Avg Flow (min.)	Peak Flow (min.)	Avg Flow (min.)	Peak Flow (min.)	Avg Flow (min.)	Peak Flow (min.)
1	376.0	1.4	3.8	6.7	1.7	8.1	5.5
1.5	564.0	2.2	5.6	10.0	2.6	12.2	8.2
2	752.0	2.9	7.5	13.4	3.5	16.3	11.0
3	1128.0	4.3	11.3	20.1	5.2	24.4	16.5
4	1503.9	5.6	15.0	26.8	6.9	32.6	22.0

Denotes chosen wet well and depth

Elevation Head:

Slab el. =	1024.5	MSL	
	1024.5	MSL	= Max. Emergency Storage el.
	1010.54	MSL	= Alarm el.
Lowest Inv. (In) =	1010.54	MSL	
	1009.54	MSL	= 2nd Pump "on" el.
	1008.54	MSL	= 1st Pump "on" el.
	Working Volume Range = 2 feet		
Pumps off el. =	1006.54	MSL	or 1006.54 = Lowest elevation of FM (if < WW inv.)
Wet Well inv. el. =	1003.54	MSL	
			= 15.96 feet from 1st "on" stage to slab
FM high pt elev =	1050	MSL	
			= 43.46 feet of elevation head *STATIC HEAD

New Force Main Total Dynamic Head Calculations:

Discharge Pipe:	25	Linear Feet	
roughness, c =	140		Material: DI
diameter, d =	6	inches	
flow, q (gpm) =	317	(pumping capacity)	
$f = 0.2083 \times \frac{(100/c)^{1.85}}{d^{4.8655}} \times \frac{q^{1.85}}{d^{4.8655}}$			
f =	0.77	feet/100 ft of pipe	Flow Velocity, v = 3.6 fps Okay.
Total Friction Loss =	0.2	feet	(3 to 6 fps is ok)

Minor Losses in Discharge Pipe:

HL =	$\frac{K \times V^2}{2g}$	where ;	K= 0.9 for 90 deg. bends K= 0.5 for 45 deg. bends K= 0.3 for 22.5 deg. bends K= 2.5 for Swing Check Valve, open full K= 0.2 for Gate Valve, open full
Number of 90 deg. bends =	4		
Number of 45 deg. bends =	0		
Number of 22.5 deg. bends =	0		
Number of Swing CVs =	1		
Number of Gate Valves =	1		
Total Minor Losses =	1.3	feet	

New Force Main:	2550	Linear Feet	
roughness, c =	155		Material: PVC
diameter, d =	6	inches	
flow, q (gpm) =	317	(pumping capacity)	
$f = 0.2083 \times \frac{(100/c)^{1.85}}{d^{4.8655}} \times \frac{q^{1.85}}{d^{4.8655}}$			
f =	0.64	feet/100 ft of pipe	Velocity, v = 3.6 fps Okay.
Total Friction Loss =	16.4	feet	(3 to 6 fps is ok)

Minor Losses in Force Main:

HL =	$\frac{K \times V^2}{2g}$	where ;	K= 0.9 for 90 deg. bends K= 0.5 for 45 deg. bends K= 0.3 for 22.5 deg. bends K= 2.5 for Swing Check Valve, open full K= 0.2 for Gate Valve, open full
Number of 90 deg. bends =	0		
Number of 45 deg. bends =	6		
Number of 22.5 deg. bends =	2		
Number of Swing CVs =	1		
Number of Gate Valves =	5		
Total Minor Losses =	1.4	feet	

SUMMARY OF HEAD LOSSES:

(New Pipe, Pump "on" setting)	
Force Main Friction Loss =	16.4
Force Main Minor Losses =	1.4
Discharge Pipe Friction Loss =	0.2
Discharge Pipe Minor Losses =	1.3
Pump "on" Elevation Head =	41.46 feet

Total Dynamic Head, TDH 60.7 feet

Old Force Main Total Dynamic Head Calculations:

Discharge Pipe:	25	Linear Feet	
roughness, c =	100		Material: DI
diameter, d =	6	inches	
flow, q (gpm) =	295	(pumping capacity)	
$f = 0.2083 \times \frac{(100/c)^{1.85}}{d^{4.8655}} \times \frac{q^{1.85}}{d^{4.8655}}$			
f =	1.26	feet/100 ft of pipe	Flow Velocity, v = 3.3 fps Okay.
Total Friction Loss =	0.3	feet	(3 to 6 fps is ok)

Minor Losses in Discharge Pipe:

HL =	$\frac{K \times V^2}{2g}$	where ;	K= 0.9 for 90 deg. bends K= 0.5 for 45 deg. bends K= 0.3 for 22.5 deg. bends K= 2.5 for Swing Check Valve, open full K= 0.2 for Gate Valve, open full
Number of 90 deg. bends =	4		
Number of 45 deg. bends =	0		
Number of 22.5 deg. bends =	0		
Number of Swing CVs =	1		
Number of Gate Valves =	1		
Total Minor Losses =	1.1	feet	

Old Force Main:	2550	Linear Feet	
roughness, c =	125		Material: PVC
diameter, d =	6	inches	
flow, q (gpm) =	295	(pumping capacity)	
$f = 0.2083 \times \frac{(100/c)^{1.85}}{d^{4.8655}} \times \frac{q^{1.85}}{d^{4.8655}}$			
f =	0.84	feet/100 ft of pipe	Velocity, v = 3.3 fps Okay.
Total Friction Loss =	21.3	feet	(3 to 6 fps is ok)

Minor Losses in Force Main:

HL =	$\frac{K \times V^2}{2g}$	where ;	K= 0.9 for 90 deg. bends K= 0.5 for 45 deg. bends K= 0.3 for 22.5 deg. bends K= 2.5 for Swing Check Valve, open full K= 0.2 for Gate Valve, open full
Number of 90 deg. bends =	0		
Number of 45 deg. bends =	6		
Number of 22.5 deg. bends =	2		
Number of Swing CVs =	1		
Number of Gate Valves =	5		
Total Minor Losses =	1.2	feet	

SUMMARY OF HEAD LOSSES:

(Old Pipe, Pump "off" setting)	
Force Main Friction Loss =	21.3
Force Main Minor Losses =	1.2
Discharge Pipe Friction Loss =	0.3
Discharge Pipe Minor Losses =	1.1
Pump "off" Elevation Head =	43.46 feet

Total Dynamic Head, TDH 67.4 feet

System Head Loss Curves*:

Roughness Coefficient, C= 140

New Pipe

Pumping Cap. (gpm)	Velocity (fps)	Force Main Losses (ft)	FM Minor Losses (ft)	Discharge Pipe Losses (ft)	Discharge Minor Losses (ft)	Elevation Head (ft)	TDH C=155
242	2.75	11.99	0.83	0.12	0.74	43.46	57.14
257	2.92	13.40	0.94	0.13	0.83	43.46	58.76
272	3.09	14.89	1.05	0.15	0.93	43.46	60.47
287	3.26	16.44	1.17	0.16	1.04	43.46	62.27
302	3.43	18.06	1.29	0.18	1.15	43.46	64.14
317	3.60	19.76	1.43	0.19	1.27	43.46	66.10
332	3.77	21.52	1.56	0.21	1.39	43.46	68.15
347	3.94	23.36	1.71	0.23	1.52	43.46	70.27
362	4.11	25.26	1.86	0.25	1.65	43.46	72.48
377	4.28	27.23	2.02	0.27	1.79	43.46	74.76
392	4.45	29.27	2.18	0.29	1.94	43.46	77.13

15 Enter Step Value

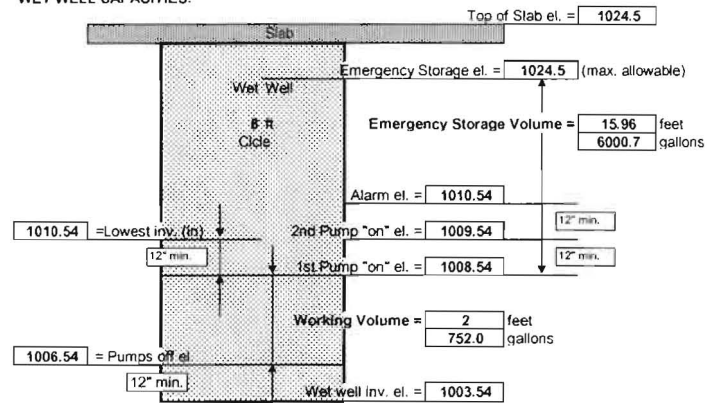
Roughness Coefficient, C= 100

Old Pipe

Pumping Cap. (gpm)	Velocity (fps)	Force Main Losses (ft)	FM Minor Losses (ft)	Discharge Pipe Losses (ft)	Discharge Minor Losses (ft)	Elevation Head (ft)	TDH C=125
220	2.50	18.73	0.69	0.18	0.61	43.46	63.67
235	2.67	21.16	0.78	0.21	0.70	43.46	66.31
250	2.84	23.73	0.89	0.23	0.79	43.46	69.10
265	3.01	26.43	1.00	0.26	0.88	43.46	72.03
280	3.18	29.27	1.11	0.29	0.99	43.46	75.11
295	3.35	32.23	1.24	0.32	1.10	43.46	78.34
310	3.52	35.33	1.36	0.35	1.21	43.46	81.71
325	3.69	38.56	1.50	0.38	1.33	43.46	85.23
340	3.86	41.92	1.64	0.41	1.46	43.46	88.88
355	4.03	45.40	1.79	0.45	1.59	43.46	92.68
370	4.20	49.01	1.94	0.48	1.72	43.46	96.62

15 Enter Step Value

Schematic Diagram:
WET WELL CAPACITIES:



EMERGENCY STORAGE PROVISIONS:

Wet Well Size = 3 feet diameter

Max. Allowable Storage Elev. = 1024.5 MSL

Depth used for Storage = 15.96 feet (1st Pump "on" to the maximum allowable elev.)

Wet Well Storage Volume = 6000.7 gallons

Additional Storage Tank Size = 0 feet in diameter

Inflow Elev. = 0 MSL

Outflow/Bottom Elev. = 0 MSL

Additional Storage Tank Volume = 0.0 gallons

Incoming Gravity Line Size = 8 inches

Gravity Line Storage Length = 0 feet

Gravity Line Storage Volume = 0.0 gallons

Incoming Gravity Line Size = 8 inches

Gravity Line Storage Length = 0 feet

Gravity Line Storage Volume = 0.0 gallons

Manhole Diameter = 4 feet

Accumulated MH depth used for Storage = 1.0 Vertical feet

Manhole Storage Volume = 94.0 gallons

Total Storage Volume = 6094.7 gallons

Using an avg inflow of 56 gpm. Storage Duration = 109 minutes

Using a peak inflow of 217 gpm. Storage Duration = 28 minutes

Force Main Flush Time

$$T_{Flush} = \frac{(t_f + t_e) \times \text{Length of Force Main}}{(C/2) \times V_{bm} \times 60 \text{ sec/min}}$$

$$t_f = V / i$$

t_f = time to fill wet well

$$t_e = V / (q - i)$$

t_e = time to empty wet well

V = volume of wet well between pump "on" & "off"

$$V = 752.0 \text{ gallons}$$

$$t_f = 13.4 \text{ min}$$

i = average dry weather flow = F

$$F = 56 \text{ gal/min}$$

$$t_e = 3.1 \text{ min}$$

q = pump capacity

$$q = 295 \text{ gal/min}$$

$$Ct = 16.5 \text{ min}$$

$$V_{bm} = 3.6 \text{ fps}$$

$$T_{Flush} = 23.6 \text{ min}$$

if $T_{Flush} < 30 \text{ min.}$, No odor control is required.

Odor control is not recommended required.

Water Hammer Calculations:

ASTM D2241 SDR 21 3" PVC Pipe

$$\text{Water hammer pressure, } p = \frac{(a) \times (v)}{2.31 \times (g)}$$

$$a = \frac{4660}{[1 + ((k \cdot d) / (E \cdot t))]^{0.5}}$$

a = pressure wave velocity (fps)

g = acceleration of gravity (32.2 ft/sec²)

k = bulk modulus of water (300,000 psi)

d = inside diameter of pipe (inches)

E = Young's modulus of pipe (psi)

t = pipe wall thickness (inches)

v = flow velocity of pipe (fps)

operating pressure = TDH in psi

where:

$$d = 6 \text{ inches}$$

$$E = 400,000 \text{ psi}$$

$$t = 0.167 \text{ inches}$$

$$v = 3.60 \text{ fps}$$

ASTM D2241 SDR 21 3" PVC

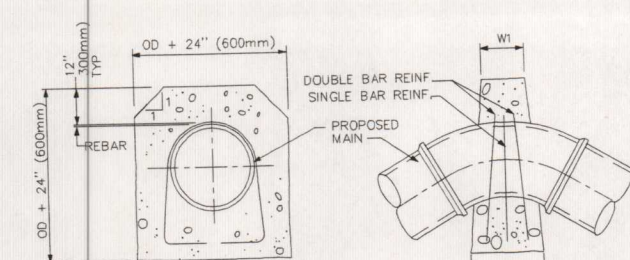
$$a = 882 \text{ fps}$$

$$p = 42.6 \text{ psi}$$

Okay.

For PVC Pipe, rated working stress = 150 psi

APPENDIX B



REINFORCEMENT SHALL BE PROVIDED AS FOLLOWS:
 6" (150mm) - 12" (300mm) PIPE (1) NUMBER 5 (15 M)
 14" (350mm) - 30" (750mm) PIPE (2) NUMBER 5'S (15 M)
 36" (900mm) - 48" (1.2m) PIPE (3) NUMBER 7'S (15 M)

VERTICAL DOWN BEND

TABLE A
UPWARD THRUST GRAVITY BLOCKS

PIPE DIA.	MIN. TOP WIDTH W1	ANGLE (degrees)	BOTTOM WIDTH W2 (in)
6" (150mm)	6" (150mm)	0-5	24 (300 MM)
		5-15	24 (300 MM)
		15-25	48 (1220 MM)
8" (200mm)	6" (150mm)	0-5	30 (760 MM)
		5-15	36 (900 MM)
12" (300mm)	6" (150mm)	0-5	48 (1220 MM)
		5-15	48 (1220 MM)
16" (400mm)	12" (300mm)	0-5	60 (150 MM)
		5-10	96 (2440MM)
24" (0.6m) THRU 36" (0.9m)		0-5	120 (3000 MM)
42" (1.05m) THRU 48" (1.20m)		0-5	120 (3000 MM)

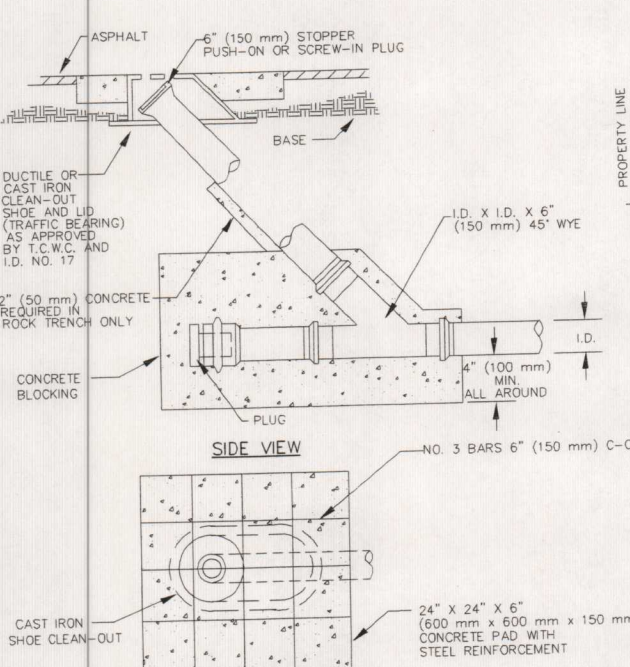
NOTES:
 1- FOR ANGLES GREATER THAN THOSE INDICATED RESTRAINT JOINTS SHALL BE INSTALLED.
 2- FOR JOINT DEFLECTIONS LESS THAN 5 DEGREES, NO HORIZONTAL OR VERTICAL THRUST RESTRAINT IS REQUIRED FOR PIPES LESS THAN 42" (1060 MM) IN DIAMETER.

THRUST BLOCK DESIGN AS FOLLOWS
 A. PRESSURE OF 150 P.S.I. (ACTUAL IF HIGHER) + 50 % SURGE ALLOWANCE
 B. MAXIMUM SOIL BEARING SEE TABLE BELOW

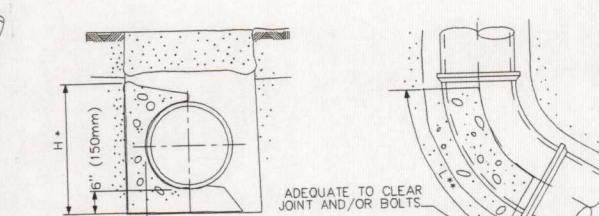
SOIL TYPES	PRESSURE
LOOSE OR SPONGY SOIL	1500 Lb./SQ.FT.
UNDISTURBED SOIL, CALICHE	2000 Lb./SQ.FT.
LIMESTONE ROCK	4000 Lb./SQ.FT.

NOTES:
 1. THE EARTH BEARING SURFACE SHALL BE UNDISTURBED MATERIAL, IF NOT POSSIBLE, THE FILL BETWEEN THE BEARING SURFACE AND THE UNDISTURBED SOIL MUST BE COMPACTED TO A MINIMUM OF 90% STANDARD PROCTOR DENSITY.
 2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSTALL ADEQUATE THRUST BLOCKING. THE CONTRACTOR SHALL MAKE THE DETERMINATION IN THE FIELD AS TO TYPE OF SOIL AND USE THE "THRUST BLOCKING DESIGN" TO ADJUST THE AMOUNTS OF THRUST BLOCKING REQUIRED AT EACH PLACE OF USE.
 3. ALL FITTINGS SHALL BE BLOCKED REGARDLESS OF THE ANGLE OF DIRECTION.

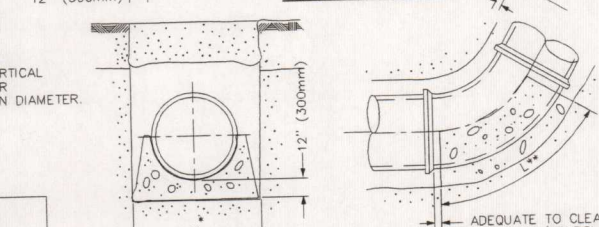
CONCRETE THRUST BLOCKING
NOT TO SCALE



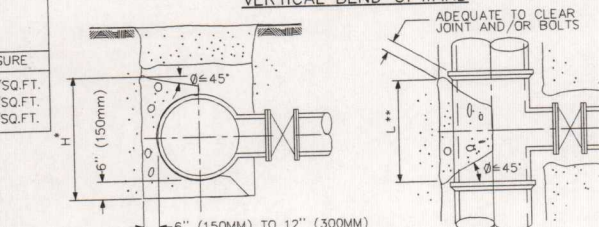
MAIN LINE CLEAN-OUT FOR WASTEWATER WITHIN PAVEMENT
NOT TO SCALE



HORIZONTAL BEND

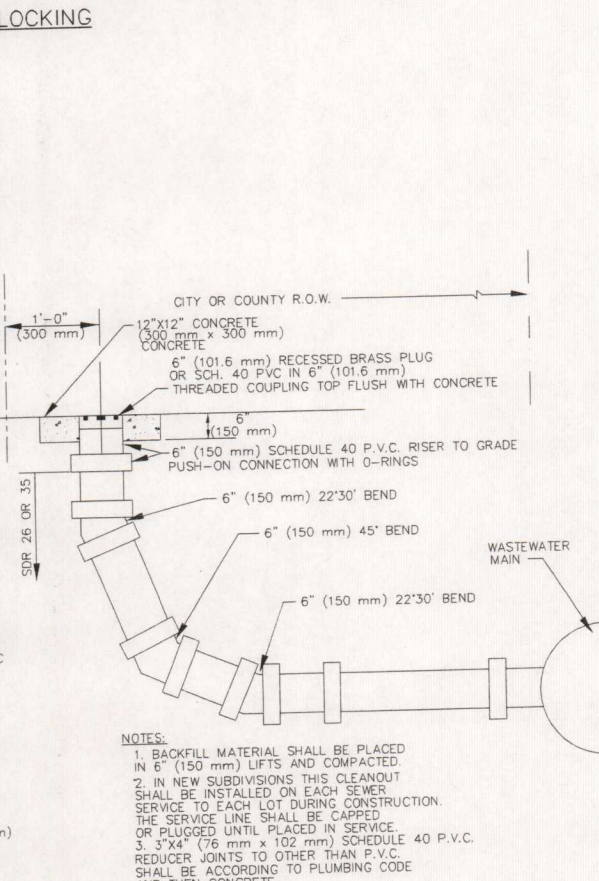


VERTICAL BEND UPWARD

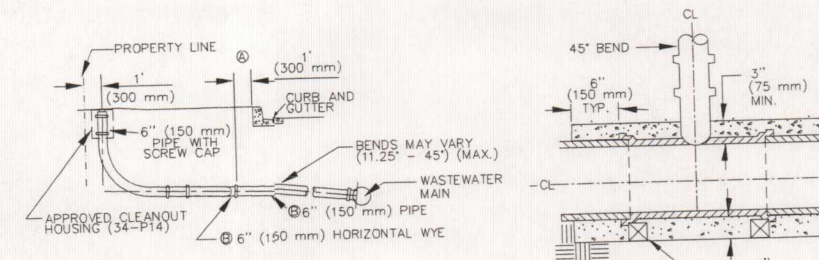


TEE / OUTLET

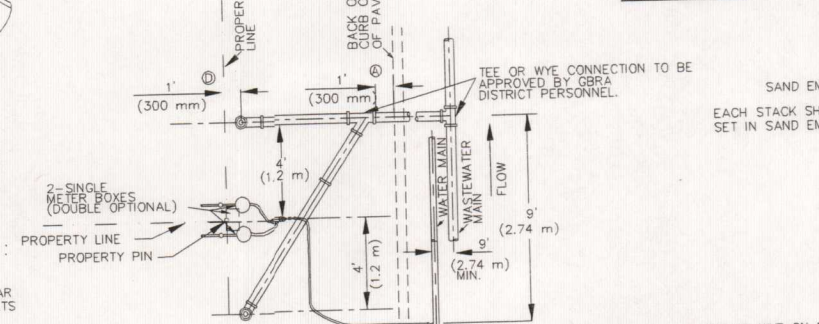
* THE DIMENSION FOR "H" MUST BE GREATER THAN DIAMETER OF THE PIPE
 ** LENGTH "L" ALONG THE BEND MUST BE GREATER THAN "H" AND LESS THAN 2 TIMES "H"



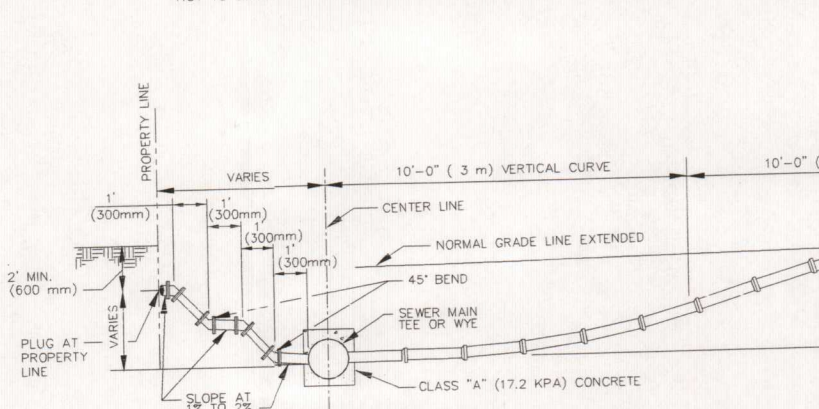
RESIDENTIAL AND COMMERCIAL CLEANOUT
NOT TO SCALE



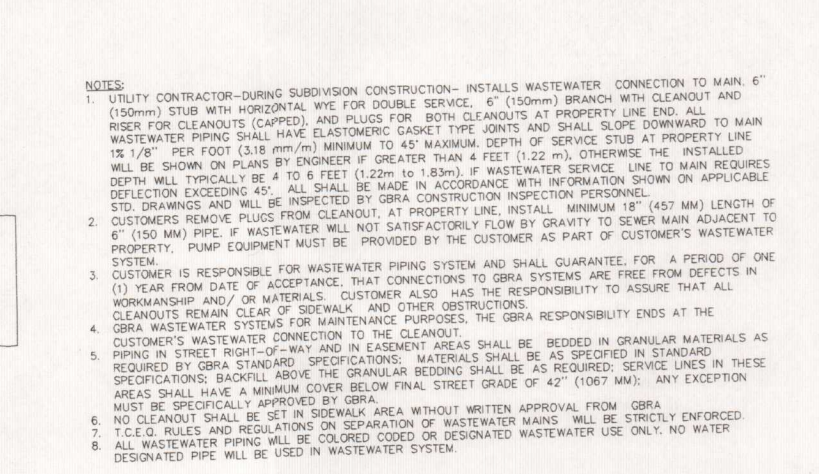
SECTION A-A



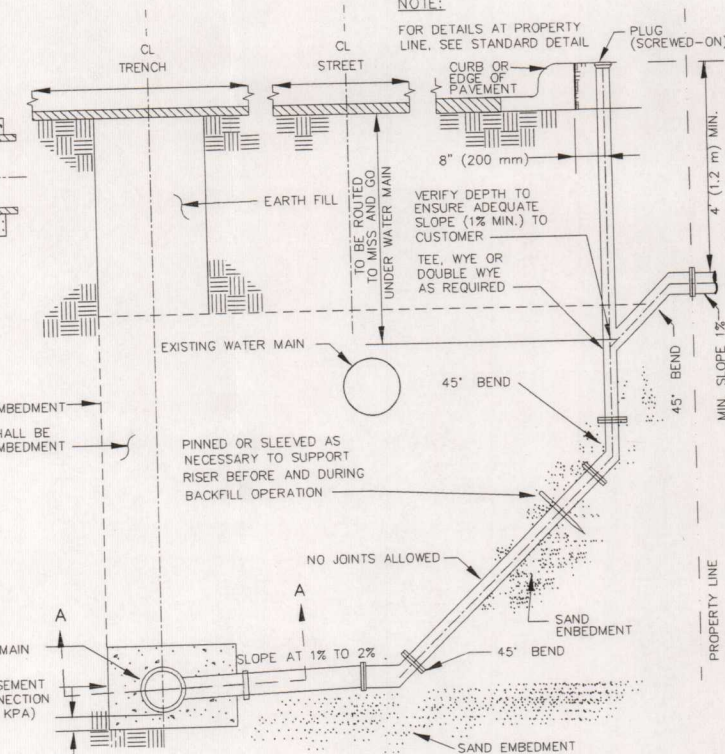
WATER AND WASTEWATER SERVICE CONNECTION DETAIL
NOT TO SCALE



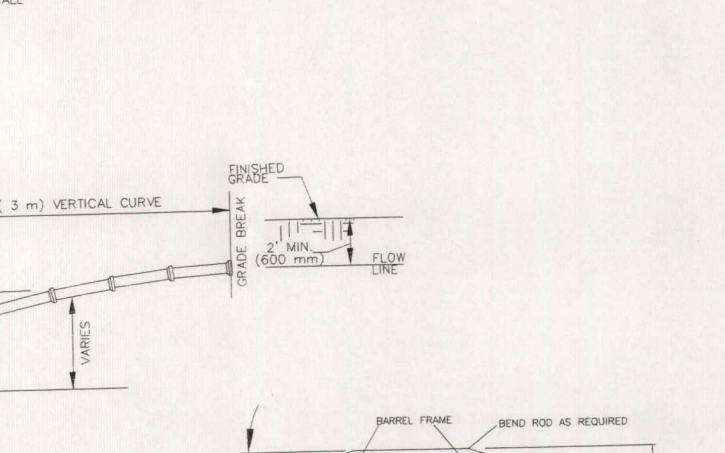
WASTEWATER SERVICE MULTIPLE CONNECTION BENCH CONFIGURATION
NOT TO SCALE



SERVICE CONNECTION DETAIL AND NOTES
NOT TO SCALE



DEEP SERVICE CONNECTION DETAIL
NOT TO SCALE

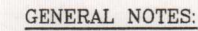


TYPICAL MANDREL DETAILS
NOT TO SCALE

NOTE: WELD ALL RODS TO FRAME
 MANDREL SHALL BE CONSTRUCTED FROM METAL OR RIGID PLASTIC MATERIAL THAT CAN WITHSTAND 200 P.S.I. WITHOUT BEING DEFORMED.
 MANDREL DIMENSIONS
 5% DEFLECTION
 FOR O.D. CONTROLLED PVC PIPE
 (ALL DIMENSIONS IN INCHES)

PIPE SIZE (in)	A (in)	B (in)	C (in)	MANDREL O.D. (in)
8	5.3	6.0	1.40	7.33
12	8.0	8.0	1.95	10.91
15	10.0	9.0	2.15	13.35
18	12.0	12.0	2.89	16.69

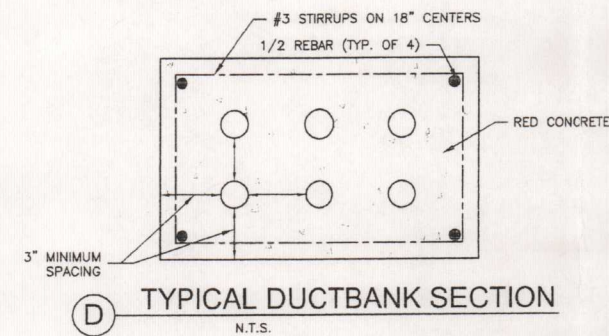
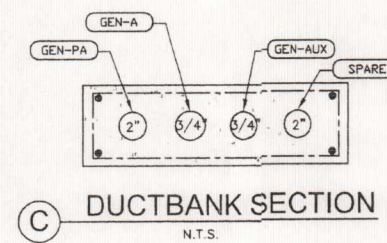
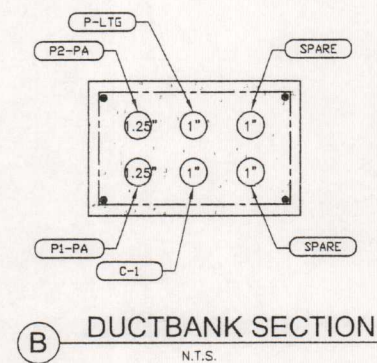
TYPICAL MANDREL DETAILS
NOT TO SCALE



1. ALL ELECTRICAL MATERIALS AND INSTALLATION SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE, LOCAL AND STATE ORDINANCES, CODES AND REGULATIONS; AND THE ELECTRIC UTILITY CRITERIA FOR INSTALLATION OF ELECTRICAL SERVICE.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL ELECTRICAL PERMITS, INSPECTIONS ETC. UNTIL THE PROJECT IS ACCEPTED BY THE OWNER. CONTRACTOR SHALL PAY ALL FEES INVOLVED IN OBTAINING PERMITS AND INSPECTIONS AND SHALL INCLUDE THE COST OF THE SAME IN HIS BID.
3. ALL POWER AND CONTROL WIRING, OTHER THAN INSTRUMENT WIRING, SHALL BE STRANDED COPPER CONDUCTORS WITH TYPE THWN/THHN OR XHHW-2 INSULATION. CONDUIT INSTALLED BELOW GRADE SHALL BE SCHEDULE 40 PVC. ABOVE GRADE CONDUIT SHALL BE RIGID ALUMINUM. ALL FITTINGS SHALL BE CAST ALUMINUM WITH THREADED CONDUIT ENTRIES. COAT ALL THREADS WITH AN OXIDATION PREVENTATIVE APPROVED FOR THAT PURPOSE.
4. THE CONTRACTOR SHALL MAKE PROVISIONS FOR AND COORDINATE THE INSTALLATION OF THE TELEPHONE LINE FOR THE AUTODIALER. FURNISH AND INSTALL THE TELEPHONE LINE FROM THE TELEPHONE BOX TO THE AUTODIALER. FURNISH THE TELEPHONE NUMBER TO THE OWNER AND TAG THE NUMBER INSIDE THE CONTROL PANEL WITH AN APPROPRIATE NAMEPLATE. THE TELEPHONE SHALL BE OPERABLE BEFORE THE STATION IS ACCEPTED.
5. CONDUITS SHALL BE INSTALLED A MINIMUM OF 24" BELOW FINISHED GRADE ELEVATION. STUBUPS SHALL BE MADE WITH LONG RADIUS PVC COATED RIGID ELBOWS AS SHOWN ON THIS DRAWING E5.

KEYED NOTES:

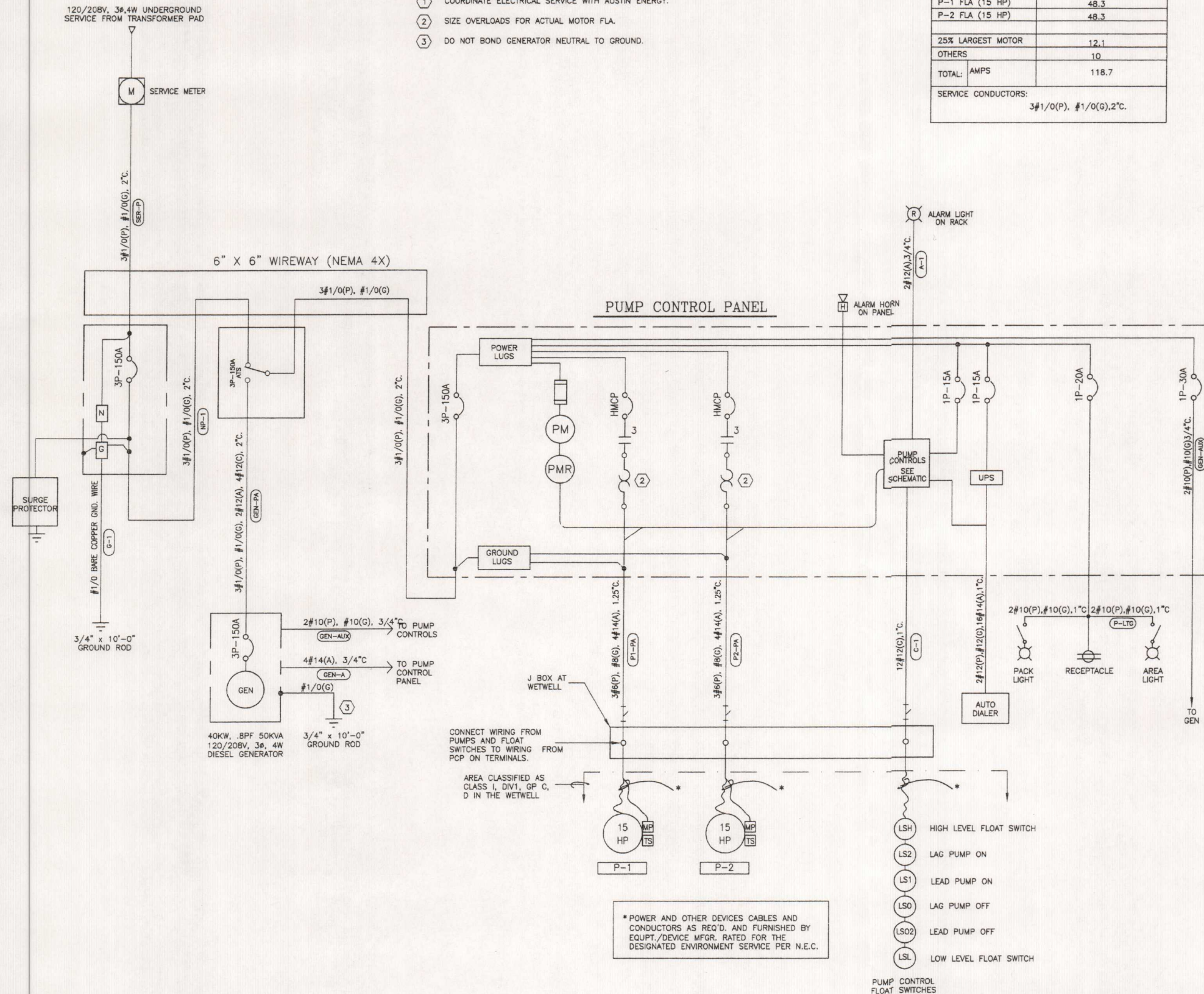
- 1 CONSTRUCT TRANSFORMER PAD PER ELECTRIC UTILITY STANDARDS. VERIFY LOCATION.
- 2 AREA LIGHT POLE. SEE DETAIL, SHEET E5.
- 3 ELECTRICAL RACK. SEE DETAIL, SHEET E6.
- 4 CONTRACTOR SHALL STUB OUT 4'-4" PVC CONDUITS 5'-0" FROM PAD FOR CONNECTION TO PRIMARY CONDUIT.



KEYNOTES

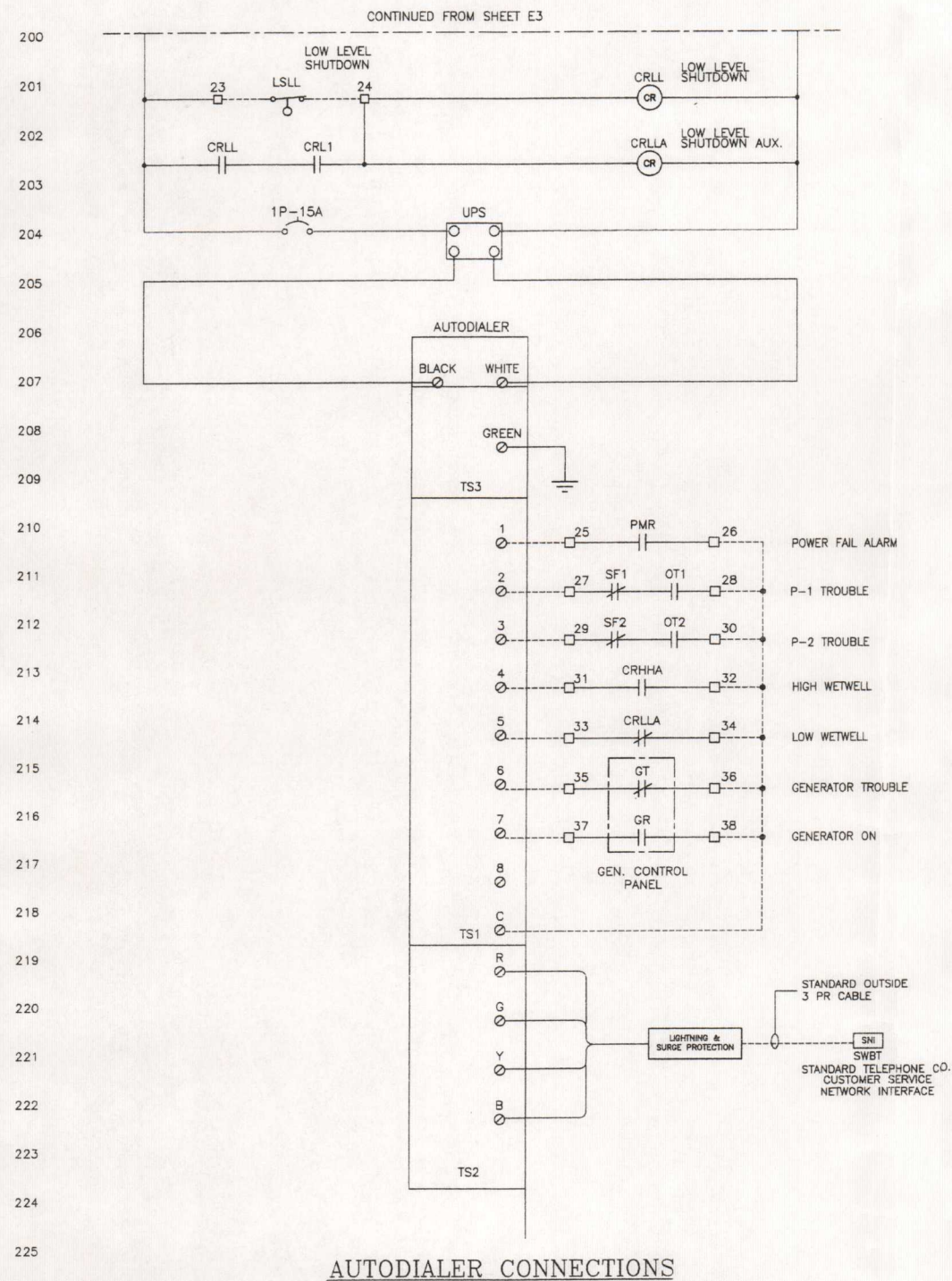
- COORDINATE ELECTRICAL SERVICE WITH AUSTIN ENERGY.
- SIZE OVERLOADS FOR ACTUAL MOTOR FLA.
- DO NOT BOND GENERATOR NEUTRAL TO GROUND.

ELECTRICAL LOAD CHART @ 120/208 V, 3Ø, 4W SERVICE	
LOAD DESCRIPTION	LOAD CURRENT (AMPERES)
P-1 FLA (15 HP)	48.3
P-2 FLA (15 HP)	48.3
25% LARGEST MOTOR	12.1
OTHERS	10
TOTAL AMPS	118.7
SERVICE CONDUCTORS: 3Ø1/0(P), Ø1/0(G), 2°C.	



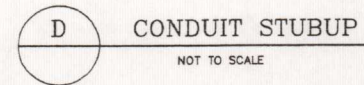
ONE LINE DIAGRAM LEGEND

	NON FUSED DISCONNECT SWITCH. SIZE INDICATED. SIZE INDICATED.
	FUSED DISCONNECT SWITCH. SWITCH AND FUSE SIZE INDICATED.
	THERMAL MAGNETIC CIRCUIT BREAKER. TRIP SIZE INDICATED.
	MAGNETIC TRIP ONLY MOTOR CIRCUIT PROTECTOR.
	MAGNETIC MOTOR STARTER. SIZE INDICATED.
	MOTOR STARTER THERMAL OVERLOAD.
	FUSE
	AUTOMATIC TRANSFER SWITCH
	3Ø MOTOR. HP INDICATED.
	3Ø POWER MONITOR.
	POWER MONITOR RELAY
	ALARM LIGHT
	ALARM HORN
	GROUND ROD. 3/4\"/>
	HIGH LEVEL FLOAT SWITCH
	LAG PUMP ON
	LEAD PUMP ON
	LAG PUMP OFF
	LEAD PUMP OFF
	LOW LEVEL CUTOFF FLOAT SWITCH
	PUMP SEAL LEAK MOISTURE PROBE
	PUMP HIGH TEMPERATURE SWITCH
	CONDUIT SEAL
	CONDUIT AND WIRING DESCRIPTION. CONDUIT SIZE, WIRE SIZE AND NUMBER OF WIRES AS SHOWN. (P)= POWER, (G)= GROUND, (C)= CONTROL WIRING, (A)=ALARM WIRING.
	CONDUIT IDENTIFIER



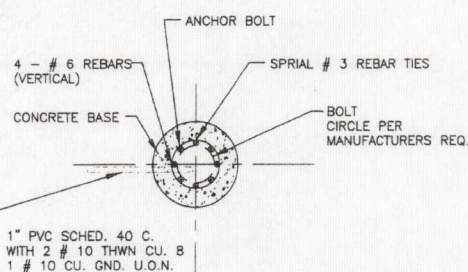
LEGEND

	MOTOR SPACE HEATER
	NORMALLY OPEN RELAY CONTACT. RELAY NUMBER INDICATED
	NORMALLY CLOSED RELAY CONTACT. RELAY NUMBER INDICATED
	MOTOR STARTER OVERLOAD. OPENS ON OVERCURRENT
	TEMPERATURE SWITCH. OPENS ON RISING TEMPERATURE.
	THREE POSITION SELECTOR SWITCH. MAINTAINED CONTACT TYPE. H-O-A = HAND-OFF-AUTO M-O-R = MANUAL-OFF-REMOTE L-O-R = LOCAL-OFF-REMOTE J-O-R = JOG-OFF-REMOTE
	THREE POSITION SELECTOR SWITCH. SPRING RETURN TYPE. L-O-R = LOCAL-OFF-REMOTE J-O-R = JOG-OFF-REMOTE
	MOMENTARY CONTACT TYPE PUSHBUTTON. NORMALLY CLOSED
	MOMENTARY CONTACT TYPE PUSHBUTTON. NORMALLY OPEN
	SPST TOGGLE SWITCH
	DPST TOGGLE SWITCH
	TERMINAL FOR CONTROL WIRING IN CONTROL PANEL
	TERMINAL FOR I/O WIRING IN CONTROL PANEL
	PHASE MONITOR AUXILIARY RELAY CONTACT. OPENS ON PHASE FAILURE.
	WIRING REMOTE FROM CONTROL PANELS
	WIRING INSIDE OF CONTROL PANELS
	CONNECTION.
	NO CONNECTION.
	PILOT LIGHT. PUSH-TO-TEST. COLOR INDICATED.
	RELAY COIL
	MOTOR STARTER COIL
	TIME DELAY RELAY. ON OR OFF DELAY AS NOTED.
	ELAPSED TIME METER
	CONTROL POWER TRANSFORMER - 480 VOLT PRIMARY, 120 VOLT SECONDARY.
	FUSE
	SHIELDED TWISTED PR. #16 INSTRUMENTATION WIRE WITH SHIELD COILED AND TAPED
	SHIELDED TWISTED PR. #16 INSTRUMENTATION WIRE WITH SHIELD CONNECTED TO GROUND TERMINAL
	GROUND CONNECTION
	FLOAT LEVEL SWITCH. CLOSES ON RISING LEVEL.
	FLOAT LEVEL SWITCH. OPENS ON RISING LEVEL.

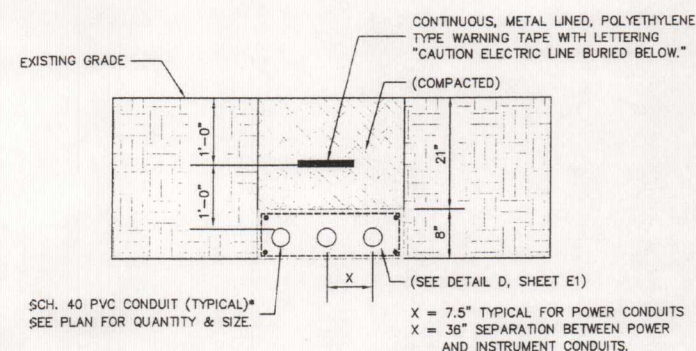


B WETWELL ELEVATION

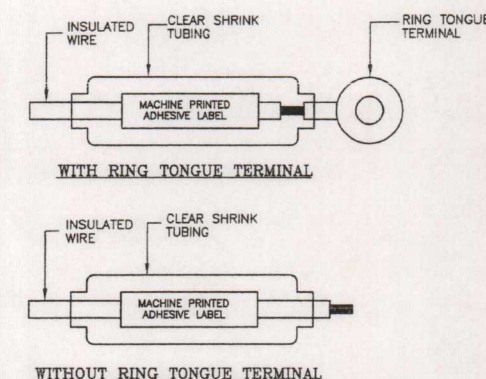
NOT TO SCALE



F PLAN VIEW
NOT TO SCALE

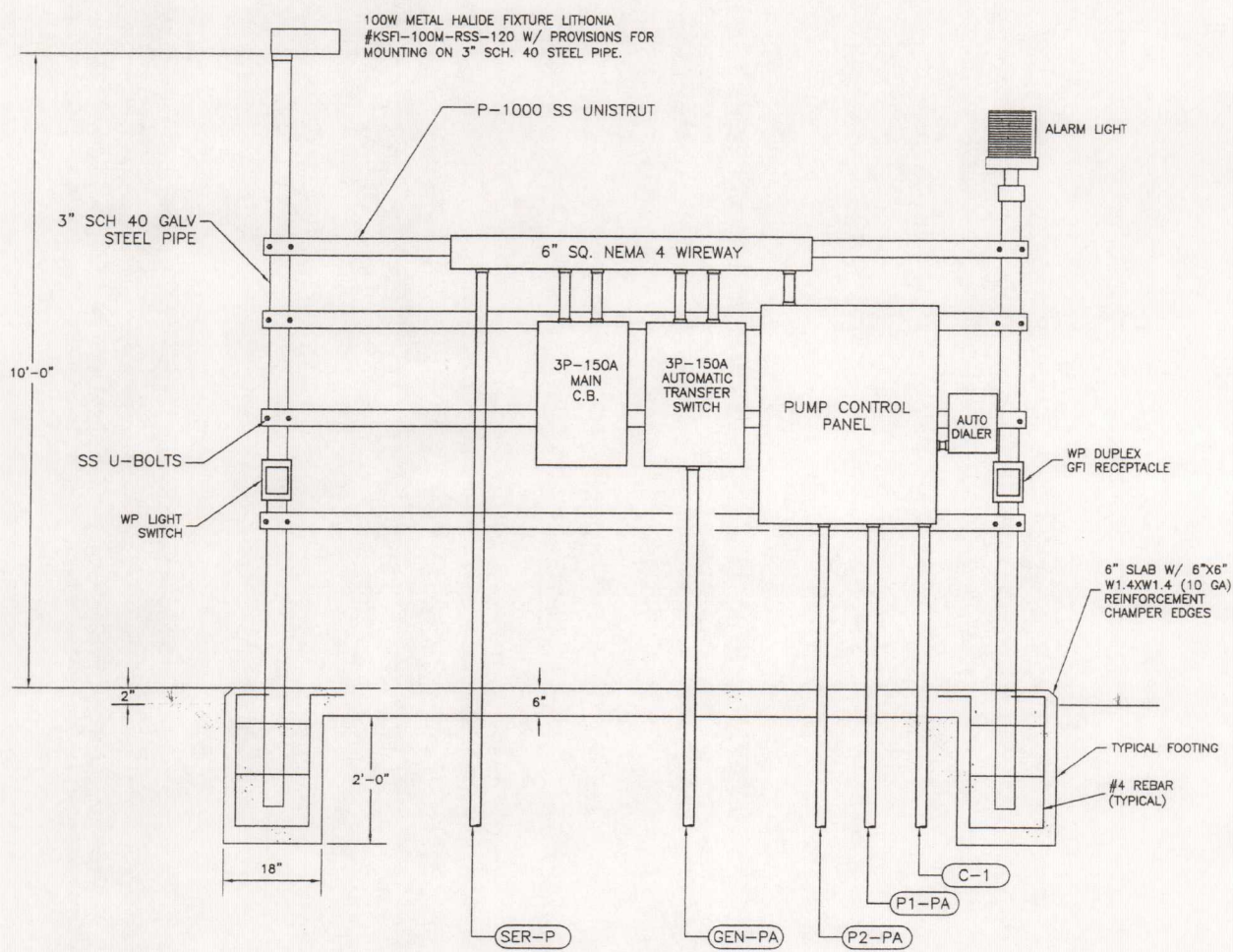


TYPICAL UNDERGROUND
CONDUIT INSTALLATION

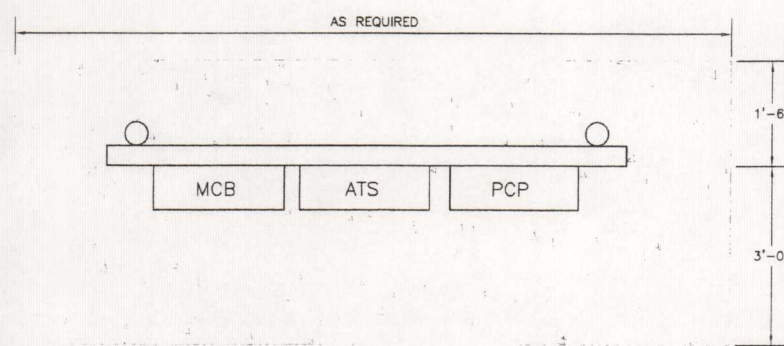


NOTE: WHERE POSSIBLE, RING TERMINALS SHALL BE USED. ONE OF THE ABOVE METHODS SHALL BE USED ON ALL WIRE #8 AWG AND SMALLER. THE SAME MUST ALSO BE USED ON LARGER WIRE UNLESS AN ALTERNATE METHOD IS SUBMITTED AND APPROVED.

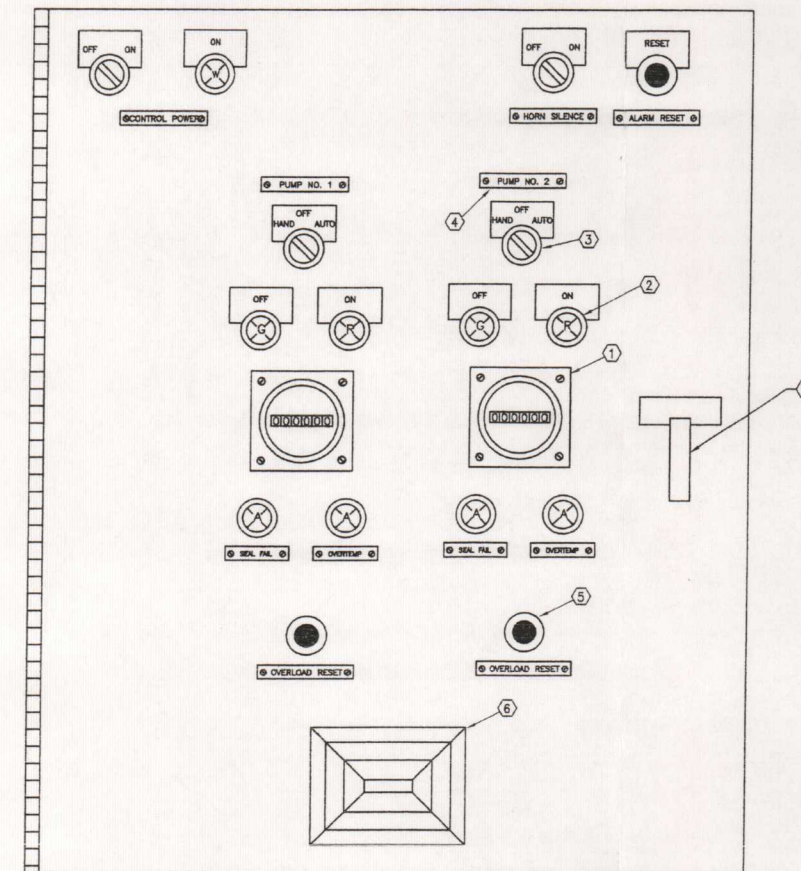
H WIRE TERMINATION & MARKING



A LIFT STATION ELECTRICAL RACK
 N.T.S.



B ELECTRICAL RACK PLAN
 N.T.S.



C LIFT STATION ELECTRICAL RACK
 N.T.S.

GENERAL NOTES

- ALL FIELD WIRING (INCOMING) AND PANEL WIRING SHALL BE TAGGED WITH BRADY OR EQUAL WIRE MARKERS.
- ALL DEVICES SHALL BE IDENTIFIED WITH PLASTIC NAMEPLATES ATTACHED TO THE PANEL DOOR OR BACK PANEL, AS APPLICABLE, WITH BRASS SCREWS.
- PANELS SHALL BE NEMA 4X, DEADFRONT, CONSTRUCTED OF MINIMUM 14 GA STAINLESS STEEL.
- ALLOW ENOUGH ROOM ON BACK PANEL FOR 25% EXPANSION.
- WIRING IN PANEL SHALL BE #14 AWG, 19 STRAND COPPER TYPE MTW.
- WIRING TO DOOR MOUNTED DEVICES SHALL BE #14 AWG, 41 STRAND COPPER TYPE SIS. LEAVE SUFFICIENT SLACK TO ALLOW FOR FULL OPENING OF PANEL DOOR.
- PROVIDE 20% SPACE IN ALL WIREWAYS.
- RUN AC AND DC WIRING IN SEPARATE WIREWAYS.
- COLOR CODE WIRING IN PANELS AS FOLLOWS:
 - AC OR DC POWER - BLACK
 - AC CONTROL CIRCUITS - RED
 - DC CONTROL CIRCUITS - BLUE
 - EXTERNALLY ENERGIZED INTERLOCK WIRING - YELLOW
 - EQUIPMENT GROUNDING CONDUCTORS - GREEN
 - NEUTRAL CONDUCTOR - WHITE
 - ALARM CIRCUITS - YELLOW
- PANEL SHALL BE DEADFRONT CONSTRUCTION WITH NO DEVICE MOUNTED ON THE OUTSIDE DOOR EXCEPT FOR ALARM HORN. ALL DEVICES SHALL BE MOUNTED ON AN INSIDE PANEL WHICH SHALL SWING OPEN TO ALLOW ACCESS TO THE INTERIOR BACK PANEL. RTU, STARTERS, BREAKERS, TERMINAL BLOCKS, RELAYS, ETC. SHALL BE MOUNTED ON THE INTERIOR BACK PANEL.
- OUTSIDE DOOR SHALL BE PROVIDED WITH A HOLD OPEN MECHANISM.

KEYNOTES:

- ELAPSED TIME METER. 0-99999.9 HRS. NON-RESETTABLE.
- INDICATING LIGHT, TRANSFORMER TYPE. 30 MM, WITH ANSI 755 20,000 HR LAMPS. COLOR AS SHOWN.
- THREE POSITION SELECTOR SWITCH. OIL TIGHT. 30 MM.
- THREE PLY PLASTIC NAMEPLATE. WHITE LETTERS. BLACK BACKGROUND.
- MOMENTARY CONTACT PUSHBUTTON.
- ALARM HORN. INSTALL ON EXTERIOR DOOR.
- MAIN BREAKER HANDLE. INTERLOCK WITH DOOR WITH DEFEAT PROVISIONS.

JOHNSON RANCH
PHASE 1
ELECTRICAL DETAILS-
SHEET 2

E6

DESIGNED BY:	DATE:
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
DATE:	JANUARY 2008



NO.	REVISION	BY	DATE

Temporary Stormwater Section
for Regulated Activities
on the Edwards Aquifer Recharge Zone
and Relating to 30 TAC §213.5(b)(4)(A), (B), (D)(I) and (G); Effective June 1, 1999

REGULATED ENTITY NAME: Johnson Ranch Phase 1

POTENTIAL SOURCES OF CONTAMINATION

Examples: Fuel storage and use, chemical storage and use, use of asphaltic products, construction vehicles tracking onto public roads, and existing solid waste.

1. Fuels for construction equipment and hazardous substances which will be used during construction:
 - ☐ Aboveground storage tanks with a cumulative storage capacity of less than 250 gallons will be stored on the site for less than one (1) year.
 - ☐ Aboveground storage tanks with a cumulative storage capacity between 250 gallons and 499 gallons will be stored on the site for less than one (1) year.
 - ☐ Aboveground storage tanks with a cumulative storage capacity of 500 gallons or more will be stored on the site. An **Aboveground Storage Tank Facility Plan** application must be submitted to the appropriate regional office of the TCEQ prior to moving the tanks onto the project.
 - ☒ Fuels and hazardous substances will not be stored on-site.
2. ☒ **ATTACHMENT A - Spill Response Actions.** A description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is provided at the end of this form.
3. ☒ Temporary aboveground storage tank systems of 250 gallons or more cumulative storage capacity must be located a minimum horizontal distance of 150 feet from any domestic, industrial, irrigation, or public water supply well, or other sensitive feature.
4. ☒ **ATTACHMENT B - Potential Sources of Contamination.** Describe **below** ~~in an attachment at the end of this form~~ any other activities or processes which may be a potential source of contamination.
 - ☒ There are no other potential sources of contamination.

Other potential sources of contamination during construction include:

- a) **Potential Source:** Asphalt products used on this project
Preventive Measure: After placement of asphalt, emulsion or coatings, the contractor will be responsible for immediate cleanup should an unexpected rain occur. For the duration of the asphalt curing time, the contractor will maintain standby personnel and equipment to contain any asphalt wash-off should an unexpected rain occur. The contractor will be instructed not to place asphalt products on the ground within 48 hours of a forecasted rain.

- b) **Potential Source:** Oil grease, fuel and hydraulic fluid contamination from construction equipment and vehicle dripping
Preventive Measure: Vehicle maintenance when possible will be performed within the construction staging area.
- c) **Potential Source:** Miscellaneous trash and litter from construction workers and material wrapping
Preventive Measure: Trash containers will be place throughout the site to encourage proper trash disposal.
- d) **Potential Source:** Construction Debris
Preventive Measure: Construction debris will be monitored daily by contractor. Debris will be collected weekly and placed in disposal bins. Situations requiring immediate attention will be addressed on a case by case basis.

SEQUENCE OF CONSTRUCTION

5. √ **ATTACHMENT C - Sequence of Major Activities.** A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is provided ~~at the end of this form~~ **below**. For each activity described, an estimate of the total area of the site to be disturbed by each activity is given.

The sequence of major activities which disturb soil during construction on this site will be divided into 2 stages. The first is site preparation that will include clearing and grubbing of vegetation and removal of existing pavement where applicable. This will disturb approximately 10.1 acres. The second is trenching, pipe installation and site cleanup. This will disturb approximately 3.0 acres

6. √ Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: Cibolo Creek

TEMPORARY BEST MANAGEMENT PRACTICES (TBMPs)

Erosion control examples: tree protection, interceptor swales, level spreaders, outlet stabilization, blankets or matting, mulch, and sod. Sediment control examples: stabilized construction exit, silt fence, filter dikes, rock berms, buffer strips, sediment traps, and sediment basins. Please refer to the Technical Guidance Manual for guidelines and specifications. **All structural BMPs must be shown on the site plan.**

7. √ **ATTACHMENT D - Temporary Best Management Practices and Measures.** A description of the TBMPs and measures that will be used during and after construction are provided ~~at the end of this form~~ **below**. For each activity listed in the sequence of construction, include appropriate control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

√ TBMPs and measures will prevent pollution of surface water, groundwater, and stormwater. The construction-phase BMPs for erosion and sediment controls have been designed to retain sediment on site to the extent practicable. The following information has been provided ~~in the attachment at the end of this form~~ **below**.

- a. A description of how BMPs and measures will prevent pollution of surface water, groundwater or stormwater that originates upgradient from the site and flows across the site.

Upgradient water will be intercepted through channels along the northwest side of the property and directed to a Cibolo Creek tributary. Silt fences and rock berms will be placed along the channel. Diversion dikes will be used to redirect the upgradient flows from north of the disturbed areas to the tributary of Cibolo Creek running down the east side of the site.

- b. A description of how BMPs and measures will prevent pollution of surface water or groundwater that originates on-site or flows off site, including pollution caused by contaminated stormwater runoff from the site.

Site preparation: The initiation of all activity on the project will disturb the largest amount of soil. Therefore, before any of this work can begin, the clearing and grading contractor will be responsible for the installation of all on-site control measures. The methodology for pollution prevention of all on-site stormwater will include: (1) erection of silt-fences along the downgradient boundary of the construction activities for temporary erosion and sedimentation controls, (2) installation of rock berms with silt fencing downgradient from areas of concentrated stormwater flow for temporary erosion control, (3) installation of stabilized construction entrance/exit(s) to reduce the dispersion of sediment from the site, and (4) installation of construction staging areas.

Construction: Prior to the initiation of construction, all previously installed control measures will be repaired or reestablished for their designed or intended purpose. The construction contractor will be responsible for the installation of all remaining on-site control measures that includes installation of the concrete truck washout pit(s), as construction phasing warrants.

- c. A description of how BMPs and measures will prevent pollutants from entering surface streams, sensitive features, or the aquifer.

Temporary measures are intended to provide a method of slowing the flow of runoff from the construction site in order to allow sediment and suspended solids to settle out of the runoff. By containing the sediment and solids within the site, they will not enter surface streams and/or sensitive features.

- d. A description of how, to the maximum extent practicable, BMPs and measures will maintain flow to naturally-occurring sensitive features identified in either the geologic assessment, TCEQ inspections, or during excavation, blasting, or construction.

BMP measures utilized in this plan are intended to allow stormwater to continue

downstream after passing through the BMP's. This will allow stormwater runoff to continue downgradient to streams or features that may exist downstream of the site.

8. The temporary sealing of a naturally-occurring sensitive feature which accepts recharge to the Edwards Aquifer as a temporary pollution abatement measure during active construction should be avoided.

N/A **ATTACHMENT E - Request to Temporarily Seal a Feature.** A request to temporarily seal a feature is provided at the end of this form. The request includes justification as to why no reasonable and practicable alternative exists for each feature.

√ There will be no temporary sealing of naturally-occurring sensitive features on the site.

9. √ **ATTACHMENT F - Structural Practices.** Describe the structural practices that will be used to divert flows away from exposed soils, to store flows, or to otherwise limit runoff discharge of pollutants from exposed areas of the site. Placement of structural practices in floodplains has been avoided.

The following structural measures will be installed prior to the initiation of site preparation activities:

- **Erection of silt fences along the downgradient boundary of construction activities and rock berms with silt fence for secondary protection.**
- **Installation of stabilized construction entrance/exit(s) and construction staging area(s).**
- **Installation of concrete truck washout pit(s), as required.**

10. √ **ATTACHMENT G - Drainage Area Map.** A drainage area map is provided at the end of this form (Sheet # 7) to support the following requirements.

--- For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin will be provided.

--- For areas that will have more than 10 acres within a common drainage area disturbed at one time, a smaller sediment basin and/or sediment trap(s) will be used.

--- For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin or other equivalent controls are not attainable, but other TBMPs and measures will be used in combination to protect down slope and side slope boundaries of the construction area.

√ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area.

11. N/A **ATTACHMENT H - Temporary Sediment Pond(s) Plans and Calculations.** Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure has been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information must be signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed temporary BMPs and measures are provided as at the end of this form.

12. √ **ATTACHMENT I - Inspection and Maintenance for BMPs.** A plan for the inspection of temporary BMPs and measures and for their timely maintenance, repair, and, if necessary, retrofit is provided at the end of this form. A description of documentation procedures and recordkeeping practices is included in the plan.
13. √ All control measures must be properly selected, installed, and maintained in accordance with the manufacturers specifications and good engineering practices. If periodic inspections by the applicant or the executive director, or other information indicates a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations.
14. √ If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain).
15. √ Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50%. A permanent stake will be provided that can indicate when the sediment occupies 50% of the basin volume.
16. √ Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).

SOIL STABILIZATION PRACTICES

Examples: establishment of temporary vegetation, establishment of permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, or preservation of mature vegetation.

17. √ **ATTACHMENT J - Schedule of Interim and Permanent Soil Stabilization Practices.** A schedule of the interim and permanent soil stabilization practices for the site is ~~attached at the end of this form~~ **below**.

Interim on-site stabilization measures, which are continuous, will include minimizing soil disturbances by exposing only the smallest practical area of land required for the shortest period of time and maximizing use of natural vegetation. As soon as practical, all disturbed soil will be stabilized as per project specifications in accordance with pages 1-35 to 1-60 of the TCEQ's Technical Guidance Manual (TGM) RG-348 (2005). Mulching, netting, erosion blankets, and seeding are acceptable.

Stabilization measures will be initiated as soon as practicable in portions of the site where construction activities have temporary or permanent ceased, and except as provided below, will be initiated no more than fourteen (14) days after the construction activity in that portion of the site has temporary or permanently ceased. Where the construction activity on a portion of the site is temporary ceased, and the earth disturbing activities will be resumed within twenty-one (21) days, temporary stabilization measures do not have to be initiated on that portion of the site. In areas experiencing droughts where the initiation of stabilization measures by the 14th day

after construction activity has temporary or permanently ceased is precluded by seasonably arid condition, stabilization measures must be initiated as soon as practicable.

18. √ Records must be kept at the site of the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
19. √ Stabilization practices must be initiated as soon as practicable where construction activities have temporarily or permanently ceased.

ADMINISTRATIVE INFORMATION

20. √ All structural controls will be inspected and maintained according to the submitted and approved operation and maintenance plan for the project.
21. √ If any geologic or manmade features, such as caves, faults, sinkholes, etc., are discovered, all regulated activities near the feature will be immediately suspended. The appropriate TCEQ Regional Office shall be immediately notified. Regulated activities must cease and not continue until the TCEQ has reviewed and approved the methods proposed to protect the aquifer from any adverse impacts.
22. √ Silt fences, diversion berms, and other temporary erosion and sediment controls will be constructed and maintained as appropriate to prevent pollutants from entering sensitive features discovered during construction.

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **TEMPORARY STORMWATER SECTION** is hereby submitted for TCEQ review and executive director approval. The application was prepared by:

Charles W. Kaough

Print Name of Customer/Agent

Ch W Kaough

Signature of Customer/Agent

8/9/08

Date

Temporary Stormwater Section TCEQ-0602

Attachment A

Spill Prevention and Control

The objective of this section is to describe measures to prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

The following steps will help reduce the stormwater impacts of leaks and spills:

Education

- (1) Be aware that different materials pollute in different amounts. Make sure that each employee knows what a “significant spill” is for each material they use, and what is the appropriate response for “significant” and “insignificant” spills. Employees should also be aware of when spill must be reported to the TCEQ. Information available in 30 TAC 327.4 and 40 CFR 302.4.
- (2) Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.
- (3) Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).
- (4) Establish a continuing education program to indoctrinate new employees.
- (5) Have a contractor’s superintendent or representative oversee and enforce proper spill prevention and control measures.

General Measures

- (1) To the extent that the work can be accomplished safely, spills of oil, petroleum, products, substances listed under 40 CFR parts 110,117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.
- (2) Store hazardous materials and wastes in covered containers and protect from vandalism.
- (3) Place a stockpile of spill cleanup materials where it will be readily accessible.
- (4) Train employees in spill prevention and cleanup.
- (5) Designate responsible individuals to oversee and enforce control measures.
- (6) Spills should be covered and protected from stormwater runoff during rainfall to the extent that it doesn’t compromise clean up activities.
- (7) Do not bury or wash spills with water.
- (8) Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMP’s.

- (9) Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with applicable regulations.
- (10) Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.
- (11) Place Material Safety Data Sheets (MSDS), as well as proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.
- (12) Keep waste storage areas clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.

Cleanup

- (1) Clean up leaks and spills immediately
- (2) Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be disposed of as hazardous waste.
- (3) Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly. See the waste management BMPs in this section for specific information.

Minor Spills

- (1) Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.
- (2) Use absorbent materials on small spills rather than hosing down or burying the spill.
- (3) Absorbent materials should be promptly removed and disposed of properly.
- (4) Follow the practice below for a minor spill:
- (5) Contain the spread of the spill
- (6) Recover spilled materials
- (7) Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills

Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.

Spills should be cleaned up immediately:

- (1) Contain spread of the spill
- (2) Notify the project foreman immediately
- (3) If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.
- (4) If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
- (5) If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Significant/Hazardous Spills

- (1) Notify the TCEQ by telephone as soon as possible and within 24 hours at 512-339-2929 (Austin) or 210-490-3096 (San Antonio) between 8 AM and 5 PM. After hours, contact the Environmental Release Hotline at 1-800-832-8224. It is the contractor's responsibility to have all emergency phone numbers at the construction site.
- (2) For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110, 119, and 302, the contractor should notify the National Response Center at (800) 424-8802.
- (3) Notification should first be made by telephone and followed up with a written report.
- (4) The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.
- (5) Other agencies which may need to be consulted include, but are not limited to, the City of Bulverde Police Department (830-438-3612), Comal County Sheriff Office (830-608-2082), Fire Department (830-964-2786), etc.

More information on spill rules and appropriate responses is available on the TCEQ website at : http://www.tnrc.state.tx.us/enforcement/emergency_response.html

Vehicle and Equipment Maintenance

- (1) If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the runoff of stormwater and the runoff of spills.
- (2) Regularly inspect onsite vehicles and equipment for leaks and repair immediately.
- (3) Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.
- (4) Always use secondary containment, such as drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
- (5) Place drip pans or absorbent materials under paving equipment when not in use.
- (6) Use absorbent materials on small spills rather than hosing down or burying the spill. Remove the absorbent materials promptly and dispose of properly.
- (7) Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.
- (8) Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place the oil filter in a funnel over the waste oil-recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask the oil supplier or recycler about recycling oil filters.
- (9) Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries even if you think all of the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Vehicle and Equipment Fueling

- (1) If fueling must occur on site, use designated areas, located away from drainage courses, to prevent the runoff of stormwater and the runoff of spills.
- (2) Discourage "topping off" of fuel tanks.
- (3) Always use secondary containment, such as a drain pan, when fueling to catch spills/ leaks.

Attachment I

Inspections

Designated and qualified person(s) shall inspect Pollution Control Measures every seven days and within 24 hours after a storm event greater than 0.5 inches of rainfall. An inspection report that summarizes the scope of the inspection, names and qualifications of personnel conducting the inspection, date of the inspection, major observations, and actions taken as a result of the inspection shall be recorded and maintained as part of the Storm Water TPDES data for a period of three years after the date of the inspection. A copy of the Inspection Report Form is provided in this Storm Water Pollution Prevention Plan.

As a minimum, the inspector shall observe: (1) significant disturbed areas for evidence of erosion, (2) storage areas for evidence of leakage from the exposed stored materials, (3) structural controls (rock berm outlets, silt fences, drainage swales, etc.) for evidence of failure or excess siltation (over 6 inches deep), (4) vehicle exit point for evidence of off-site sediment tracking, (5) vehicle storage areas for signs of leaking equipment or spills, and (6) concrete truck rinse-out pit for signs of potential failure. Deficiencies noted during the inspection will be corrected and documented within seven (7) calendar days following the inspection or before the next anticipated storm event if practicable.

Please consult the Edwards Aquifer Guidance Manual (TGM) for additional reference.

The manual can be found at:

http://www.tceq.state.tx.us/comm_exec/forms_pubs/pubs/rg/rg-348/index.html

Attached are the appropriate sections of the TGM pertaining to Maintenance and repair of the TBMP's.

Pollution Prevention Measure	Inspected	Corrective Action	
		Description	Date Completed
General			
Revegetation			
Erosion/sediment controls			
Vehicle exits			
Material areas			
Equipment Areas			
Concrete rinse			
Construction Debris			
Trash receptacles			
Infrastructure			
Roadway clearing			
Utility clearing			
Roadway grading			
Utility construction			
Drainage construction			
Roadway base			
Roadway surfaces			
Site cleanups			
Building			
Clearing for building			
Foundation grading			
Utility construction			
Foundation construction			
Building construction			
Site grading			
Site cleanup			

**Indicate N/A where measure does not apply*

By my signature below, I certify that all terms are acceptable and the project site is in compliance with SWPPP.

Inspector's Name

Inspector's Signature

Name of Owner/Operator (Firm)

Date

Note: Inspector is to attach a brief statement of his qualifications to this report.

PROJECT MILESTONE DATES

Date when major site grading activities begin:

<u>Construction Activity</u>	<u>Date</u>

Dates when construction activities temporarily or permanently cease on all or a portion of the project:

<u>Construction Activity</u>	<u>Date</u>

Dates when stabilization measures are initiated:

<u>Stabilization Activity</u>	<u>Date</u>

1.4.3 Silt Fence

A silt fence is a barrier consisting of geotextile fabric supported by metal posts to prevent soil and sediment loss from a site. When properly used, silt fences can be highly effective at controlling sediment from disturbed areas. They cause runoff to pond, allowing heavier solids to settle out. If not properly installed, silt fences are not likely to be effective. A schematic illustration of a silt fence is shown in Figure 1-26.

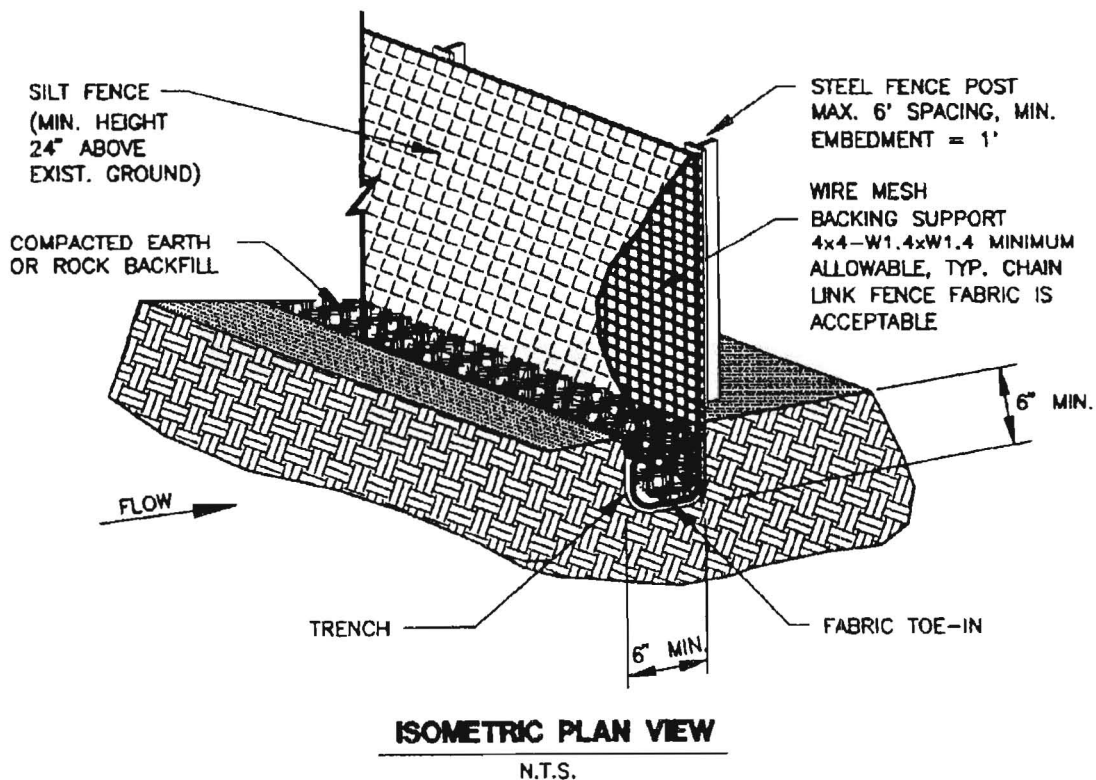


Figure 1-26 Schematic of a Silt Fence Installation (NCTCOG, 1993b)

The purpose of a silt fence is to intercept and detain water-borne sediment from unprotected areas of a limited extent. Silt fence is used during the period of construction near the perimeter of a disturbed area to intercept sediment while allowing water to percolate through. This fence should remain in place until the disturbed area is permanently stabilized. Silt fence should not be used where there is a concentration of water in a channel or drainage way. If concentrated flow occurs after installation, corrective action must be taken such as placing a rock berm in the areas of concentrated flow.

Silt fencing within the site may be temporarily moved during the day to allow construction activity provided it is replaced and properly anchored to the ground at the end of the day. Silt fences on the perimeter of the site or around drainage ways should not be moved at any time.

Materials:

- (1) Silt fence material should be polypropylene, polyethylene or polyamide woven or nonwoven fabric. The fabric width should be 36 inches, with a minimum unit weight of 4.5 oz/yd, mullen burst strength exceeding 190 lb/in², ultraviolet stability exceeding 70%, and minimum apparent opening size of U.S. Sieve No. 30.
- (2) Fence posts should be made of hot rolled steel, at least 4 feet long with Tee or Y-bar cross section, surface painted or galvanized, minimum nominal weight 1.25 lb/ft², and Brindell hardness exceeding 140.
- (3) Woven wire backing to support the fabric should be galvanized 2" x 4" welded wire, 12 gauge minimum.

Installation:

- (1) Steel posts, which support the silt fence, should be installed on a slight angle toward the anticipated runoff source. Post must be embedded a minimum of 1-foot deep and spaced not more than 8 feet on center. Where water concentrates, the maximum spacing should be 6 feet.
- (2) Lay out fencing down-slope of disturbed area, following the contour as closely as possible. The fence should be sited so that the maximum drainage area is ¼ acre/100 feet of fence.
- (3) The toe of the silt fence should be trenched in with a spade or mechanical trencher, so that the down-slope face of the trench is flat and perpendicular to the line of flow. Where fence cannot be trenched in (e.g., pavement or rock outcrop), weight fabric flap with 3 inches of pea gravel on uphill side to prevent flow from seeping under fence.
- (4) The trench must be a minimum of 6 inches deep and 6 inches wide to allow for the silt fence fabric to be laid in the ground and backfilled with compacted material.
- (5) Silt fence should be securely fastened to each steel support post or to woven wire, which is in turn attached to the steel fence post. There should be a 3-foot overlap, securely fastened where ends of fabric meet.

- (6) Silt fence should be removed when the site is completely stabilized so as not to block or impede storm flow or drainage.

Common Trouble Points:

- (1) Fence not installed along the contour causing water to concentrate and flow over the fence.
- (2) Fabric not seated securely to ground (runoff passing under fence)
- (3) Fence not installed perpendicular to flow line (runoff escaping around sides)
- (4) Fence treating too large an area, or excessive channel flow (runoff overtops or collapses fence)

Inspection and Maintenance Guidelines:

- (1) Inspect all fencing weekly, and after any rainfall.
- (2) Remove sediment when buildup reaches 6 inches.
- (3) Replace any torn fabric or install a second line of fencing parallel to the torn section.
- (4) Replace or repair any sections crushed or collapsed in the course of construction activity. If a section of fence is obstructing vehicular access, consider relocating it to a spot where it will provide equal protection, but will not obstruct vehicles. A triangular filter dike may be preferable to a silt fence at common vehicle access points.
- (5) When construction is complete, the sediment should be disposed of in a manner that will not cause additional siltation and the prior location of the silt fence should be revegetated. The fence itself should be disposed of in an approved landfill.

1.4.4 Triangular Sediment Filter Dikes

The purpose of a triangular sediment filter dike (Figure 1-27) is to intercept and detain water-borne sediment from unprotected areas of limited extent. The triangular sediment filter dike is used where there is no concentration of water in a channel or other drainage way above the barrier and the contributing drainage area is less than one acre. If the uphill slope above the dike exceeds 10%, the length of the slope above the dike should be less than 50 feet. If concentrated flow occurs after installation, corrective action should be taken such as placing rock berm in the areas of concentrated flow.

This measure is effective on paved areas where installation of silt fence is not possible or where vehicle access must be maintained. The advantage of these controls is the ease with which they can be moved to allow vehicle traffic, then reinstalled to maintain sediment control.

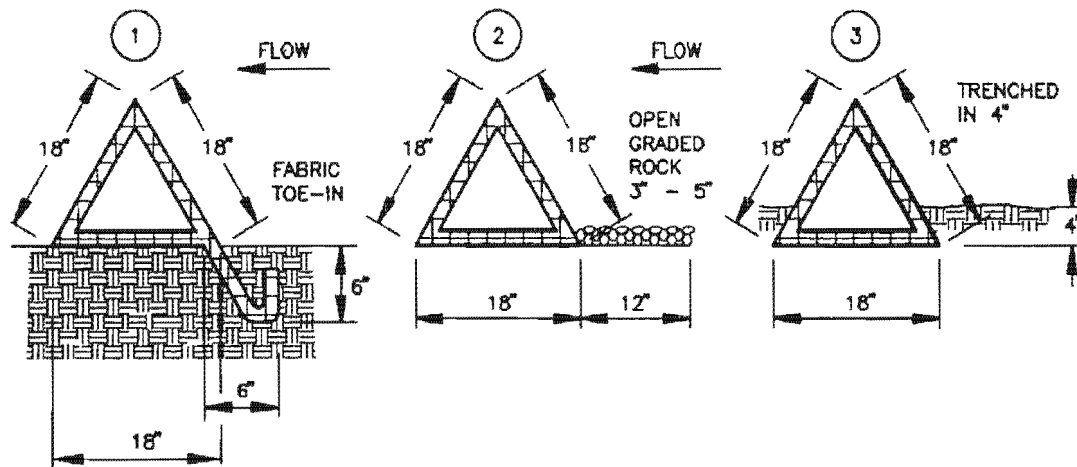
Materials:

- (1) Silt fence material should be polypropylene, polyethylene or polyamide woven or nonwoven fabric. The fabric width should be 36 inches, with a minimum unit weight of 4.5 oz/yd, mullen burst strength exceeding 190 lb/in², ultraviolet stability exceeding 70%, and minimum apparent opening size of U.S. Sieve No. 30.
- (2) The dike structure should be 6 gauge 6" x 6" wire mesh folded into triangular form being eighteen (18) inches on each side.

Installation:

- (1) As shown in the diagram (Figure 1-27), the frame should be constructed of 6" x 6", 6 gauge welded wire mesh, 18 inches per side, and wrapped with geotextile fabric the same composition as that used for silt fences.
- (2) Filter fabric should lap over ends six (6) inches to cover dike to dike junction; each junction should be secured by shoat rings.
- (3) Position dike parallel to the contours, with the end of each section closely abutting the adjacent sections.
- (4) There are several options for fastening the filter dike to the ground as shown in Figure 1-27. The fabric skirt may be toed-in with 6 inches of compacted material, or 12 inches of the fabric skirt should extend uphill and be secured with a minimum of 3 inches of open graded rock, or with staples or nails. If these two options are not feasible the dike structure may be trenched in 4 inches.

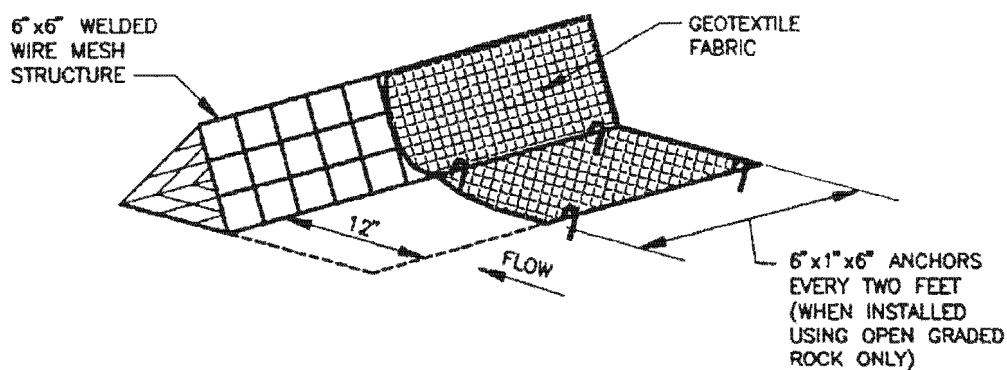
- (5) Triangular sediment filter dikes should be installed across exposed slopes during construction with ends of the dike tied into existing grades to prevent failure and should intercept no more than one acre of runoff.
- (6) When moved to allow vehicular access, the dikes should be reinstated as soon as possible, but always at the end of the workday.



CROSS SECTION OF INSTALLATION OPTIONS

N.T.S.

1. TOE-IN 6" MIN
2. WEIGHTED W/ 3" - 5" OPEN GRADED ROCK
3. TRENCHED IN 4"



ISOMETRIC PLAN VIEW

N.T.S.

Figure I-27 Schematic of a Triangular Filter Dike (NCTCOG, 1993)

Common Trouble Points:

- (1) Fabric skirt missing, too short, or not securely anchored (flows passing under dike).
- (2) Gap between adjacent dikes (runoff passing between dikes).
- (3) Dike not placed parallel to contour (runoff flowing around dike).

Inspection and Maintenance Guidelines:

- (1) Inspection should be made weekly or after each rainfall event and repair or replacement should be made promptly as needed by the contractor.
- (2) Inspect and realign dikes as needed to prevent gaps between sections.
- (3) Accumulated silt should be removed after each rainfall, and disposed of in a manner which will not cause additional siltation.
- (4) After the site is completely stabilized, the dikes and any remaining silt should be removed. Silt should be disposed of in a manner that will not contribute to additional siltation.

1.4.5 Rock Berms

The purpose of a rock berm is to serve as a check dam in areas of concentrated flow, to intercept sediment-laden runoff, detain the sediment and release the water in sheet flow. The rock berm should be used when the contributing drainage area is less than 5 acres. Rock berms are used in areas where the volume of runoff is too great for a silt fence to contain. They are less effective for sediment removal than silt fences, particularly for fine particles, but are able to withstand higher flows than a silt fence. As such, rock berms are often used in areas of channel flows (ditches, gullies, etc.). Rock berms are most effective at reducing bed load in channels and should not be substituted for other erosion and sediment control measures farther up the watershed.

Materials:

- (1) The berm structure should be secured with a woven wire sheathing having maximum opening of 1 inch and a minimum wire diameter of 20 gauge galvanized and should be secured with shoat rings.
- (2) Clean, open graded 3- to 5-inch diameter rock should be used, except in areas where high velocities or large volumes of flow are expected, where 5- to 8-inch diameter rocks may be used.

Installation:

- (1) Lay out the woven wire sheathing perpendicular to the flow line. The sheathing should be 20 gauge woven wire mesh with 1 inch openings.
- (2) Berm should have a top width of 2 feet minimum with side slopes being 2:1 (H:V) or flatter.
- (3) Place the rock along the sheathing as shown in the diagram (Figure 1-28), to a height not less than 18".
- (4) Wrap the wire sheathing around the rock and secure with tie wire so that the ends of the sheathing overlap at least 2 inches, and the berm retains its shape when walked upon.
- (5) Berm should be built along the contour at zero percent grade or as near as possible.
- (6) The ends of the berm should be tied into existing upslope grade and the berm should be buried in a trench approximately 3 to 4 inches deep to prevent failure of the control.

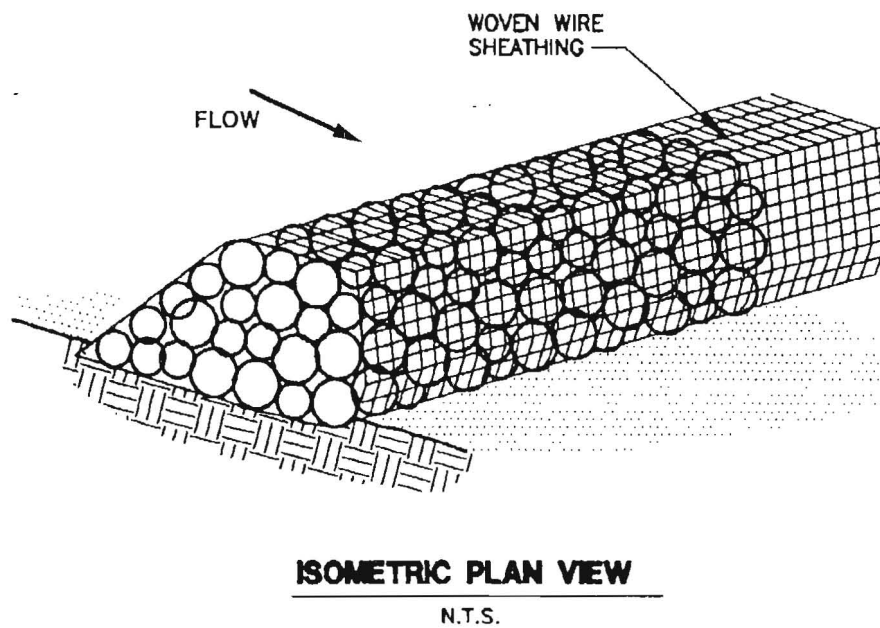
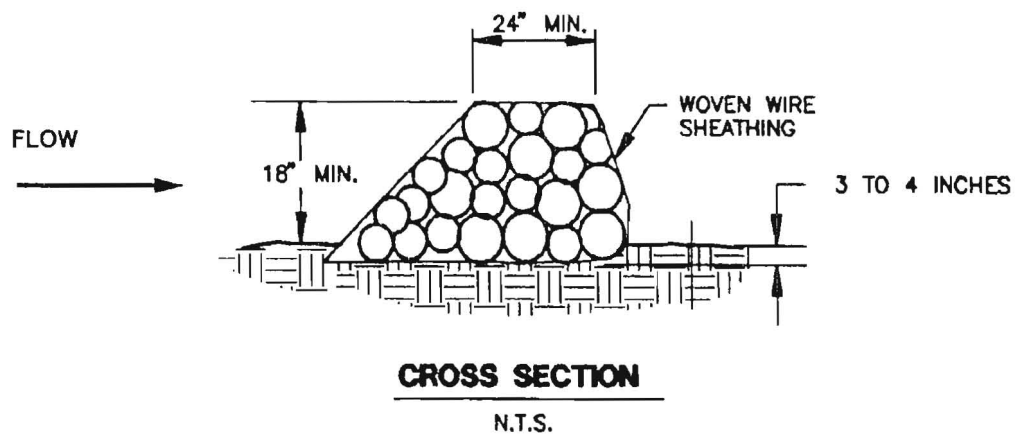


Figure 1-28 Schematic Diagram of a Rock Berm (NCTCOG, 1993)

Common Trouble Points:

- (1) Insufficient berm height or length (runoff quickly escapes over the top or around the sides of berm)
- (2) Berm not installed perpendicular to flow line (runoff escaping around one side)

Inspection and Maintenance Guidelines:

- (1) Inspection should be made weekly and after each rainfall by the responsible party. For installations in streambeds, additional daily inspections should be made.
- (2) Remove sediment and other debris when buildup reaches 6 inches and dispose of the accumulated silt in an approved manner that will not cause any additional siltation.
- (3) Repair any loose wire sheathing.
- (4) The berm should be reshaped as needed during inspection.
- (5) The berm should be replaced when the structure ceases to function as intended due to silt accumulation among the rocks, washout, construction traffic damage, etc.
- (6) The rock berm should be left in place until all upstream areas are stabilized and accumulated silt removed.

Agent Authorization Form
For Required Signature
Edwards Aquifer Protection Program
Relating to 30 TAC Chapter 213
Effective June 1, 1999

I Michael L. Schoenfeld
Print Name

Vice President
Title - Owner/President/Other

of DH/JB Partnership, Ltd.
Corporation/Partnership/Entity Name

have authorized Charles W. Kaough, P.E.
Print Name of Agent/Engineer

of Loomis Austin, Inc.
Print Name of Firm

to represent and act on the behalf of the above named Corporation, Partnership, or Entity for the purpose of preparing and submitting this plan application to the Texas Commission on Environmental Quality (TCEQ) for the review and approval consideration of regulated activities.

I also understand that:

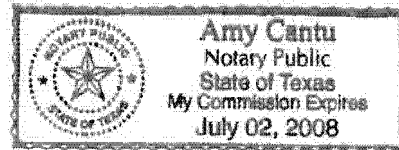
1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 213 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to \$10,000 per day per violation.
2. For applicants who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.
3. Application fees are due and payable at the time the application is submitted. The application fee must be sent to the TCEQ cashier or to the appropriate regional office. The application will not be considered until the correct fee is received by the commission.

4. A notarized copy of the Agent Authorization Form must be provided for the person preparing the application, and this form must accompany the completed application.

Michael Schoenfeld
Applicant's Signature

03/27/08
Date

THE STATE OF Texas §
County of Travis §



BEFORE ME, the undersigned authority, on this day personally appeared Michael Schoenfeld known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that (s)he executed same for the purpose and consideration therein expressed.

GIVEN under my hand and seal of office on this 27 day of March, 2008.

NOTARY PUBLIC

Amy Cantu

Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 7/2/08

Texas Commission on Environmental Quality
Edwards Aquifer Protection Plan
Application Fee Form

NAME OF PROPOSED REGULATED ENTITY: **Johnson Ranch Phase 1**
REGULATED ENTITY LOCATION: **Comal County, Texas**
NAME OF CUSTOMER: **Mike Schoenfeld – DH/JB Partnership, Ltd. 512.394.0635**
CONTACT PERSON: Charles W. Kaough, P.E. PHONE: 512-327-1180
(Please Print)

Customer Reference Number (if issued): CN 602996472 (nine digits)
Regulated Entity Reference Number (if issued): RN _____ (nine digits)

AUSTIN REGIONAL OFFICE (3373)

- ☐ Hays
☐ Travis
☐ Williamson

SAN ANTONIO REGIONAL OFFICE (3362)

- ☐ Bexar ☐ Medina
☒ Comal ☐ Uvalde
☐ Kinney

APPLICATION FEES MUST BE PAID BY CHECK, CERTIFIED CHECK, OR MONEY ORDER, PAYABLE TO THE Texas Commission on Environmental Quality. YOUR CANCELED CHECK WILL SERVE AS YOUR RECEIPT. **THIS FORM MUST BE SUBMITTED WITH YOUR FEE PAYMENT.** THIS PAYMENT IS BEING SUBMITTED TO (CHECK ONE):

☒ **SAN ANTONIO REGIONAL OFFICE**

- ☐ **Mailed to TCEQ:**
TCEQ - Cashier
Revenues Section
Mail Code 214
P.O. Box 13088
Austin, TX 78711-3088

☐ **AUSTIN REGIONAL OFFICE**

- ☐ **Overnight Delivery to TCEQ:**
TCEQ - Cashier
12100 Park 35 Circle
Building A, 3rd Floor
Austin, TX 78753
512/239-0347

Type of Plan	Size	Fee Due
Water Pollution Abatement, One Single Family Residential Dwelling	Acres	\$
Water Pollution Abatement, Multiple Single Family Residential and Parks	Acres	\$
Water Pollution Abatement, Non-residential	Acres	\$
Sewage Collection System	4,256 L.F.	\$2,128.00
Lift Stations without sewer lines	Acres	\$
Underground or Aboveground Storage Tank Facility	Tanks	\$
Piping System(s)(only)	Each	\$
Exception	Each	\$
Extension of Time	Each	\$

Signature

Date

If you have questions on how to fill out this form or about the Edwards Aquifer protection program, please contact us at 210/490-3096 for projects located in the San Antonio Region or 512/339-2929 for projects located in the Austin Region.

Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512/239-3282.

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program
Application Fee Schedule
30 TAC §213.14 (effective 11/14/97) & 30 TAC §213.9 (effective 6/1/99)

Water Pollution Abatement Plans and Modifications

PROJECT	PROJECT AREA IN ACRES	FEE
One Single Family Residential Dwelling	<5	\$500
Multiple Single Family Residential and Parks	<5	\$1,000
	5 < 10	\$2,000
	10 < 50	\$3,000
	≥50	\$5,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	< 1	\$2,000
	1 < 5	\$3,000
	5 < 10	\$4,000
	≥10	\$5,000

Organized Sewage Collection Systems and Modifications

PROJECT	COST PER LINEAR FOOT	MINIMUM FEE MAXIMUM FEE
Sewage Collection Systems	\$0.50	\$500 - \$5,000

**Underground and Aboveground Storage Tank System
Facility Plans and Modifications**

PROJECT	COST PER TANK OR PIPING SYSTEM	MINIMUM FEE MAXIMUM FEE
Underground and Aboveground Storage Tank Facility	\$500	\$500 - \$5,000

Exception Requests

PROJECT	FEE
Exception Request	\$250

Extension of Time Requests

PROJECT	FEE
Extension of Time Request	\$100



TCEQ Use Only

TCEQ Core Data Form

For detailed instructions regarding completion of this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (If other is checked please describe in space provided)			
<input checked="" type="checkbox"/> New Permit, Registration or Authorization (Core Data Form should be submitted with the program application)			
<input type="checkbox"/> Renewal (Core Data Form should be submitted with the renewal form)		<input type="checkbox"/> Other	
2. Attachments Describe Any Attachments: (ex. Title V Application, Waste Transporter Application, etc.)			
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No N/A			
3. Customer Reference Number (if issued)		4. Regulated Entity Reference Number (if issued)	
CN 602996472		RN	

SECTION II: Customer Information

5. Effective Date for Customer Information Updates (mm/dd/yyyy)							
6. Customer Role (Proposed or Actual) – as it relates to the Regulated Entity listed on this form. Please check only one of the following:							
<input type="checkbox"/> Owner		<input type="checkbox"/> Operator		<input checked="" type="checkbox"/> Owner & Operator			
<input type="checkbox"/> Occupational Licensee		<input type="checkbox"/> Responsible Party		<input type="checkbox"/> Voluntary Cleanup Applicant		<input type="checkbox"/> Other:	
7. General Customer Information							
<input type="checkbox"/> New Customer		<input type="checkbox"/> Update to Customer Information		<input type="checkbox"/> Change in Regulated Entity Ownership			
<input type="checkbox"/> Change in Legal Name (Verifiable with the Texas Secretary of State)				<input checked="" type="checkbox"/> No Change**			
**If "No Change" and Section I is complete, skip to Section III – Regulated Entity Information.							
8. Type of Customer:							
<input type="checkbox"/> Corporation		<input type="checkbox"/> Individual		<input type="checkbox"/> Sole Proprietorship- D.B.A			
<input type="checkbox"/> City Government		<input type="checkbox"/> County Government		<input type="checkbox"/> Federal Government			
<input type="checkbox"/> State Government		<input type="checkbox"/> Other Government		<input type="checkbox"/> General Partnership			
<input type="checkbox"/> Limited Partnership		<input type="checkbox"/> Other:					
9. Customer Legal Name (If an individual, print last name first: ex: Doe, John) If new Customer, enter previous Customer below End Date:							
DH/JB Partnership, Ltd.							
10. Mailing Address:							
102A Cordillera Ridge							
City		Boerne		State		TX	
ZIP		78006		ZIP + 4			
11. Country Mailing Information (if outside USA)				12. E-Mail Address (if applicable)			
13. Telephone Number		14. Extension or Code		15. Fax Number (if applicable)			
() -				() -			
16. Federal Tax ID (9 digits)		17. TX State Franchise Tax ID (11 digits)		18. DUNS Number (if applicable)		19. TX SOS Filing Number (if applicable)	
20. Number of Employees						21. Independently Owned and Operated?	
<input type="checkbox"/> 0-20 <input type="checkbox"/> 21-100 <input type="checkbox"/> 101-250 <input type="checkbox"/> 251-500 <input type="checkbox"/> 501 and higher						<input type="checkbox"/> Yes <input type="checkbox"/> No	

SECTION III: Regulated Entity Information

22. General Regulated Entity Information (If 'New Regulated Entity' is selected below this form should be accompanied by a permit application)			
<input checked="" type="checkbox"/> New Regulated Entity <input type="checkbox"/> Update to Regulated Entity Name <input type="checkbox"/> Update to Regulated Entity Information <input type="checkbox"/> No Change** (See below)			
**If "NO CHANGE" is checked and Section I is complete, skip to Section IV, Preparer Information.			
23. Regulated Entity Name (name of the site where the regulated action is taking place)			
Johnson Ranch			

24. Street Address of the Regulated Entity: (No P.O. Boxes)							
	City		State		ZIP		ZIP + 4
25. Mailing Address:							
	City		State		ZIP		ZIP + 4
26. E-Mail Address:							
27. Telephone Number	28. Extension or Code		29. Fax Number (if applicable)				
(512) 394-0635			(866) 260-0077				
30. Primary SIC Code (4 digits)	31. Secondary SIC Code (4 digits)	32. Primary NAICS Code (5 or 6 digits)		33. Secondary NAICS Code (5 or 6 digits)			
1521							
34. What is the Primary Business of this entity? (Please do not repeat the SIC or NAICS description.)							
Single Family Homes							

Questions 34 – 37 address geographic location. Please refer to the instructions for applicability.

35. Description to Physical Location:	Northeast corner of US 281 and FM 1863. Entrance approximately 0.5 miles east from the intersection with US 281.					
36. Nearest City	County		State		Nearest ZIP Code	
Bulverde	Comal		TX		78163	
37. Latitude (N) In Decimal:			38. Longitude (W) In Decimal:			
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds	
29	44	57.35	98	25	12.80	

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form or the updates may not be made. If your Program is not listed, check other and write it in. See the Core Data Form instructions for additional guidance.

<input type="checkbox"/> Dam Safety	<input type="checkbox"/> Districts	<input type="checkbox"/> Edwards Aquifer	<input type="checkbox"/> Industrial Hazardous Waste	<input type="checkbox"/> Municipal Solid Waste
<input type="checkbox"/> New Source Review – Air	<input type="checkbox"/> OSSF	<input type="checkbox"/> Petroleum Storage Tank	<input type="checkbox"/> PWS	<input type="checkbox"/> Sludge
<input type="checkbox"/> Stormwater	<input type="checkbox"/> Title V – Air	<input type="checkbox"/> Tires	<input type="checkbox"/> Used Oil	<input type="checkbox"/> Utilities
<input type="checkbox"/> Voluntary Cleanup	<input type="checkbox"/> Waste Water	<input type="checkbox"/> Wastewater Agriculture	<input type="checkbox"/> Water Rights	<input checked="" type="checkbox"/> Other: SCS Application

SECTION IV: Preparer Information

40. Name:	Charles W. Kaough, P.E.		41. Title:	Professional Engineer
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address	
(512) 327-1180	none	(512) 327-4062	ckaough@loomisaustin.com	

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 9 and/or as required for the updates to the ID numbers identified in field 39.

(See the Core Data Form instructions for more information on who should sign this form.)

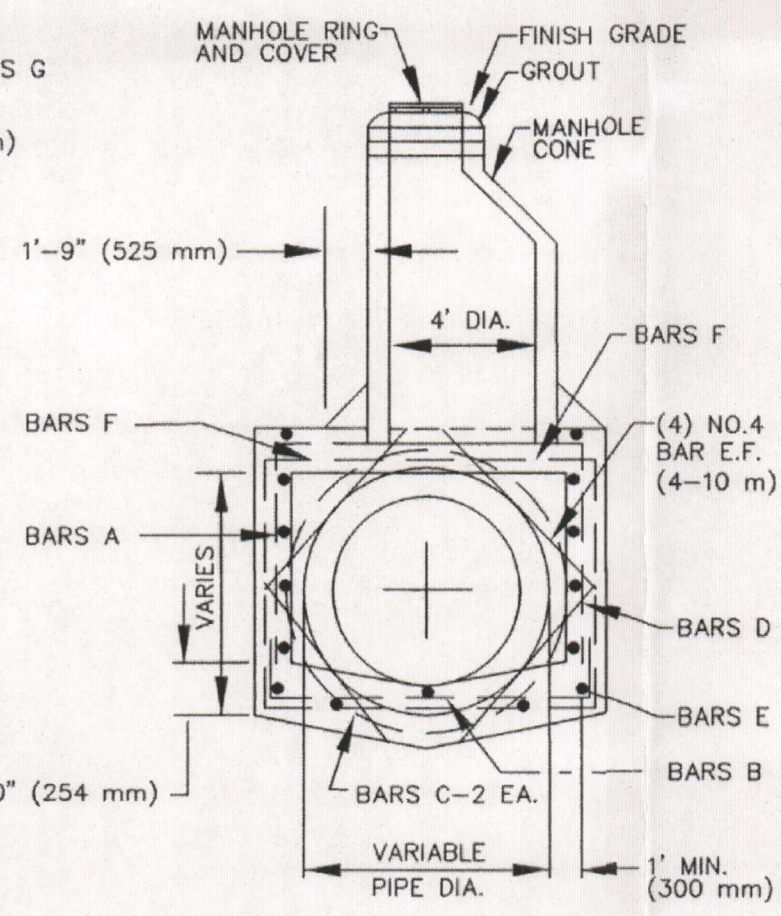
Company:	Loomis Austin, Inc.	Job Title:	Professional Engineer
Name (In Print):	Charles W. Kaough	Phone:	(512) 327-1180
Signature:	Charles W. Kaough	Date:	3/26/2008 8/4/08

The diagram illustrates a square-to-round transition fitting. Key dimensions and components are labeled as follows:

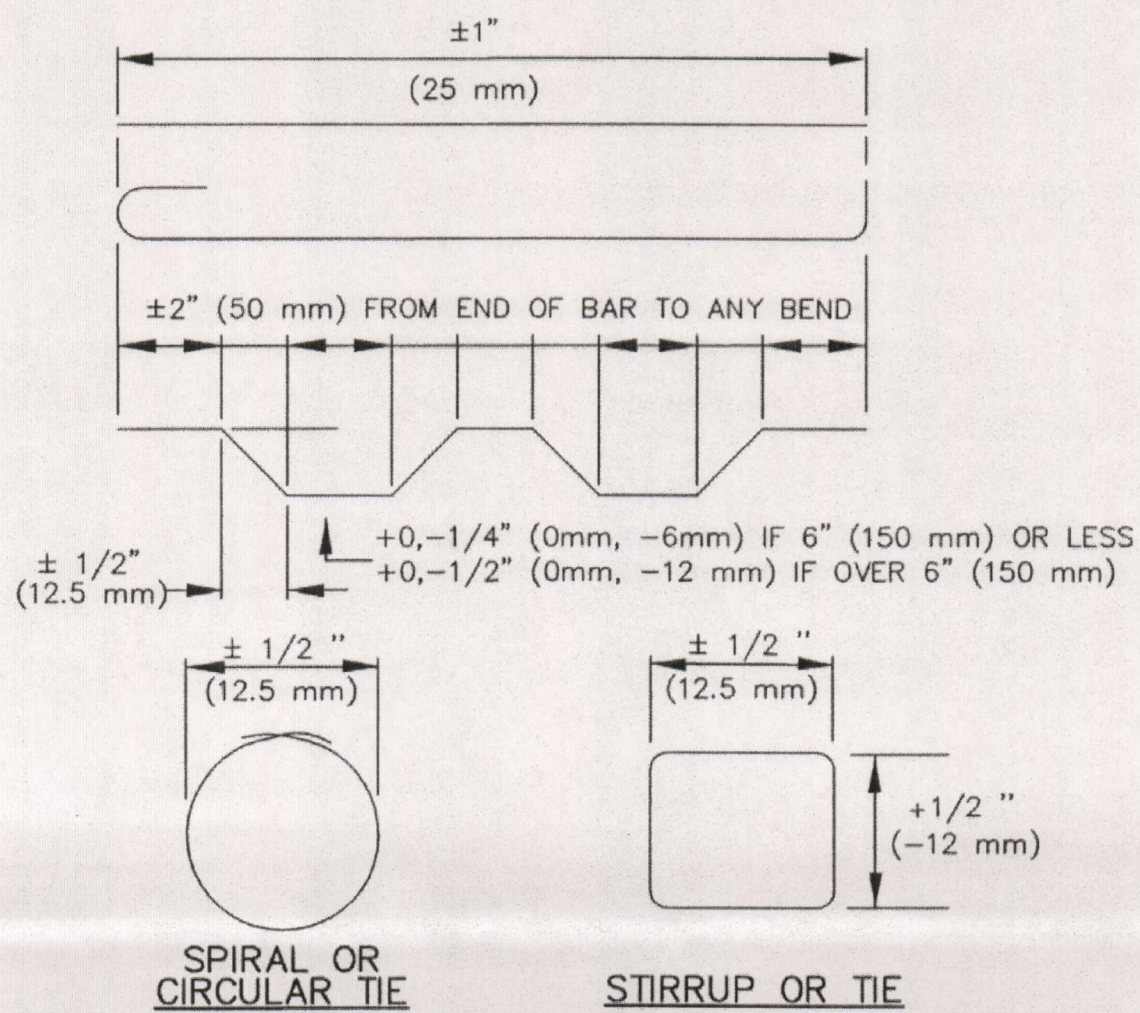
- Overall Dimensions:** The square flange has a side length of 1'-0" (300 mm). The central round opening has an outer diameter (O.D.) labeled as "O.D. OF PIPE".
- Components:**
 - PIPE:** The central pipe passing through the fitting.
 - BARS A, B, C, D, E, F, G:** Seven reinforcing bars are shown. Bars A, B, C, and D are located in the corners of the square flange. Bars E, F, and G are located in the corners of the round section.
 - AS REQUIRED:** A label indicating the length of the bars in the square section.
 - 3" LAP (75 mm) TYP.:** A label indicating the typical lap length of the bars in the round section.
- Labels:**
 - PLAN:** The title of the diagram.
 - NO. 6 BARS (4-20m):** The specification for the reinforcing bars.
 - EACH FACE 2" (50 mm):** The thickness of the concrete on each face of the bars.

- [illegible]

JHOL F



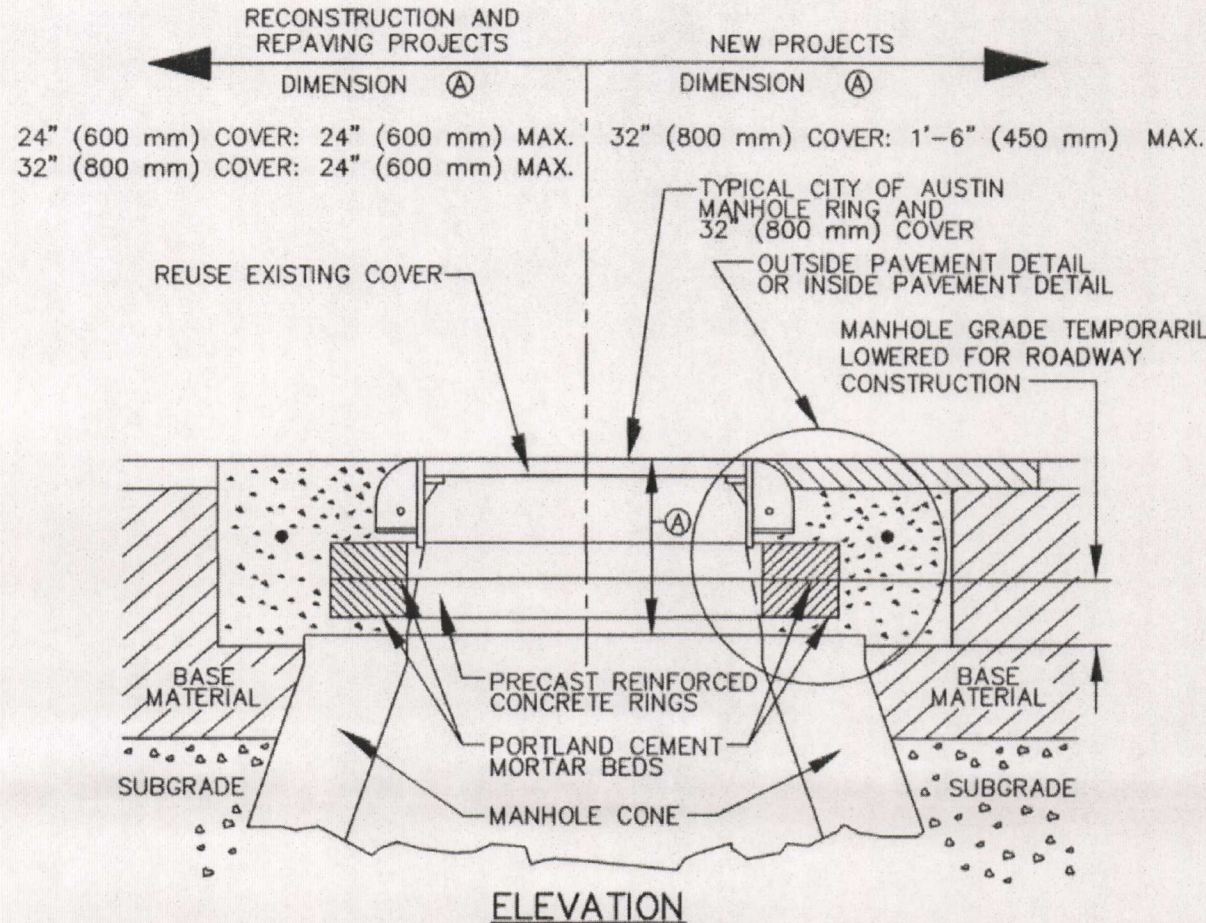
SECTION B-B



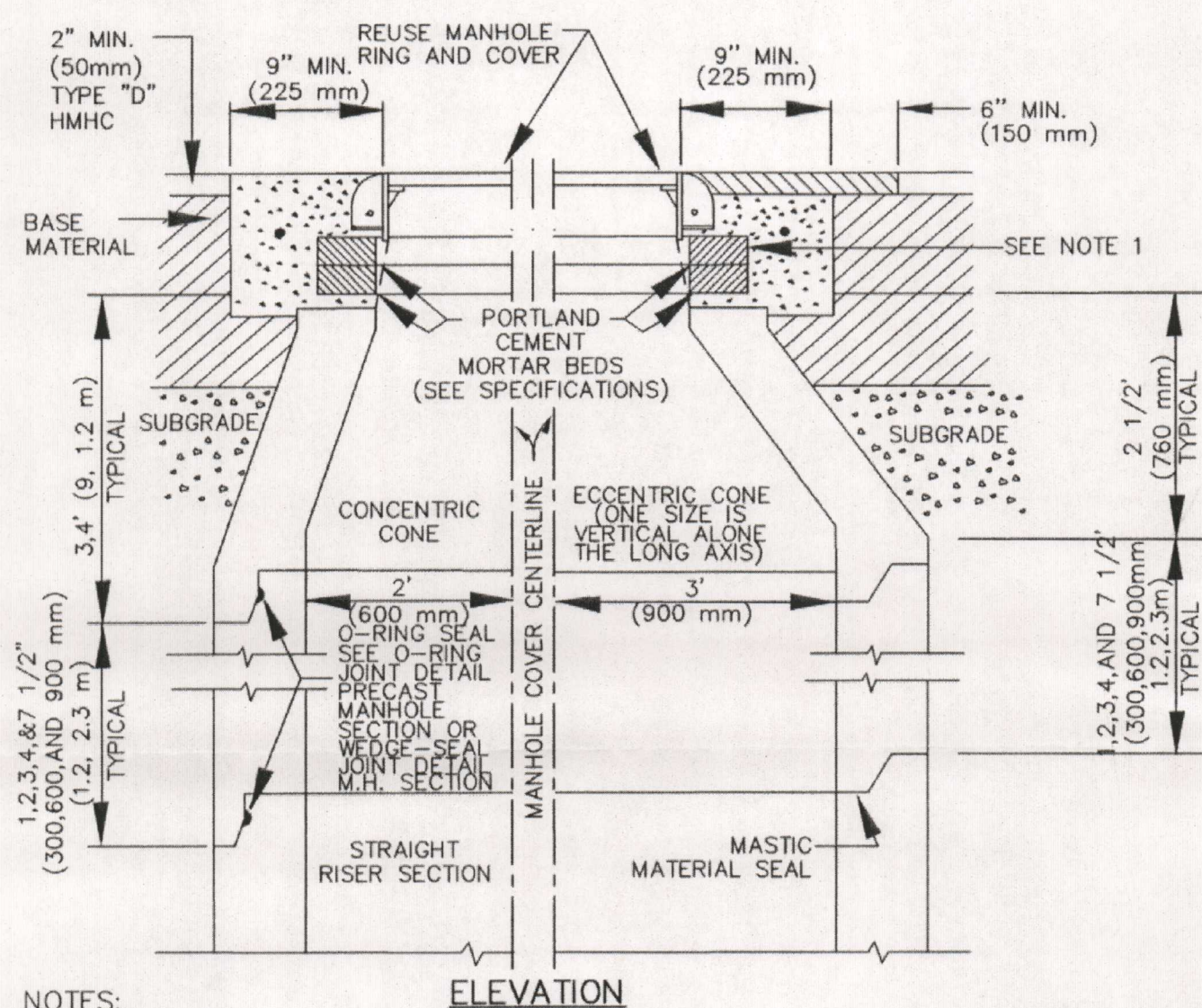
NOTE:
FABRICATING TOLERANCES FOR BARS, FROM PLAN CENTERLINE
DIMENSIONS SHALL NOT BE GREATER THAN SHOWN.

REINFORCED STEEL TOLERANCES

NOT TO SCALE



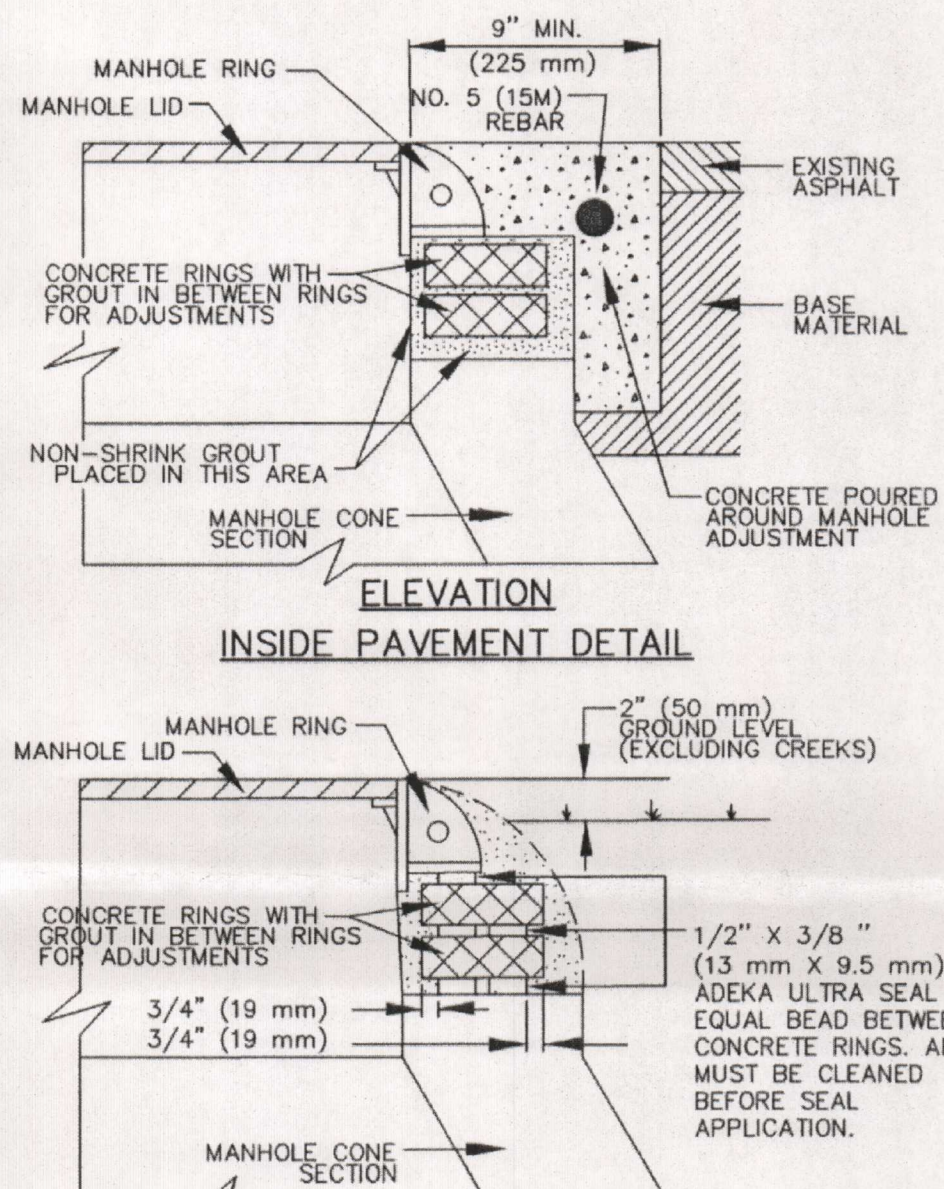
ELEVATION



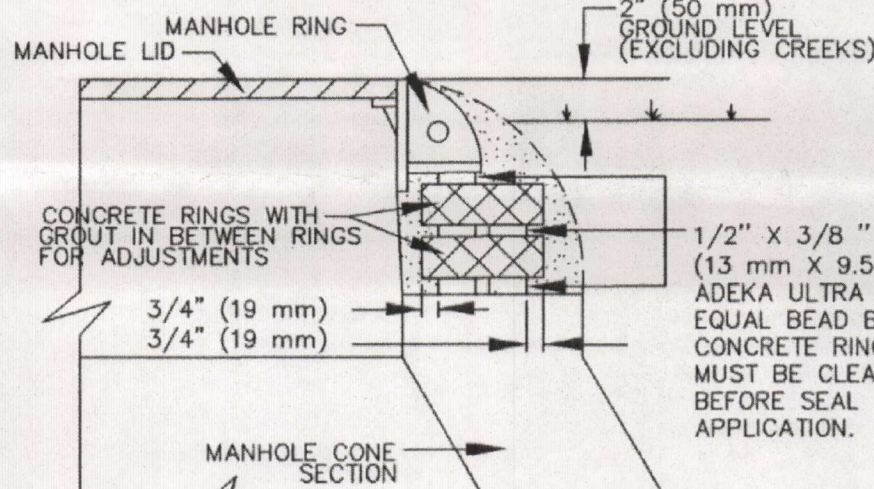
ELEVATION

- ### ELEVATION
- NOTES:
1. MANHOLE SECTIONS TEMPORARILY REMOVED FOR ROADWAY CONSTRUCTION MAY BE REUSED ONLY WITH THE WRITTEN APPROVAL OF THE INSPECTOR. O-RINGS SHALL NOT BE REUSED.
 2. ANY COMBINATION OF REMOVING THE CONCRETE RINGS, AND/OR THE MANHOLE CONE, AND/OR THE STRAIGHT RISER SECTION OF THE MANHOLE SHALL BE ACCEPTABLE TO TEMPORARILY LOWER THE MANHOLE GRADE FOR ROADWAY RECONSTRUCTION.
 3. WHILE THE MANHOLE IS TEMPORARILY LOWERED, A SHEET OF STEEL SUITABLE TO SUPPORT ALL IMPOSED LOADS SHALL BE USED TO COVER THE OPENING. THE STEEL PLATE SHALL BE SET IN MORTAR TO PREVENT LEAKAGE.
 4. SUBGRADE AND BASE MATERIALS SHALL BE COMPACTED TO 95% AND 100% DENSITIES, RESPECTIVELY. COMPACTION SHALL BE BY MECHANICAL TAMPING TO THE DENSITIES SPECIFIED.

MAJOR MANHOLE ADJUSTMENT
NOT TO SCALE



INSIDE PAVEMENT DETAIL

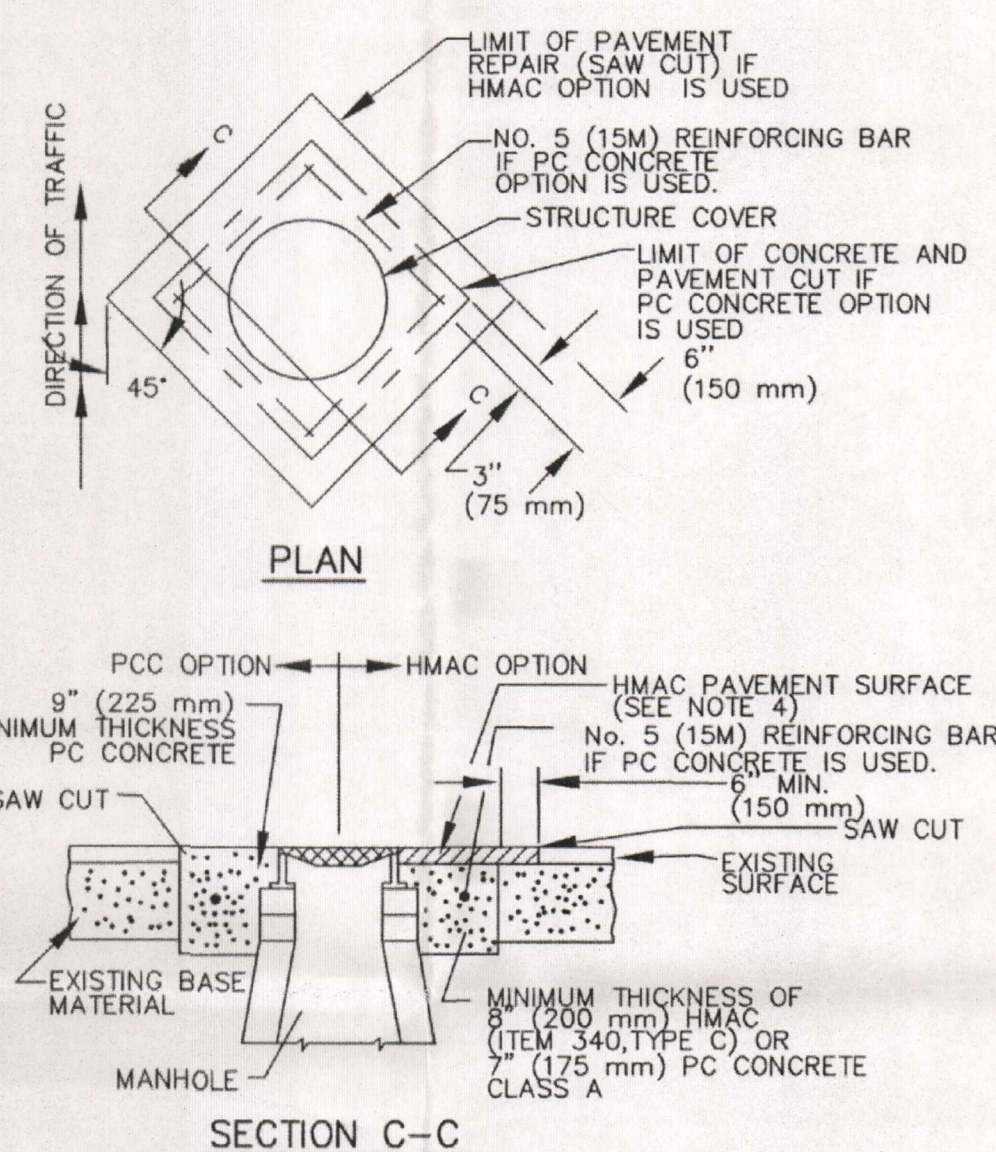


ELEVATION

- NOTES: ELEVATION
1. MORTAR BEDS SHALL NOT EXCEED 1" (25 mm) .
 2. SUBGRADE AND BASE MATERIALS SHALL BE COMPACTED ACCORDING TO THE CITY OF AUSTIN STANDARD SPECIFICATIONS.

OUTSIDE PAVEMENT DETAIL

NEW MANHOLE CONSTRUCTION AND
MINOR MANHOLE ADJUSTMENT
NOT TO SCALE



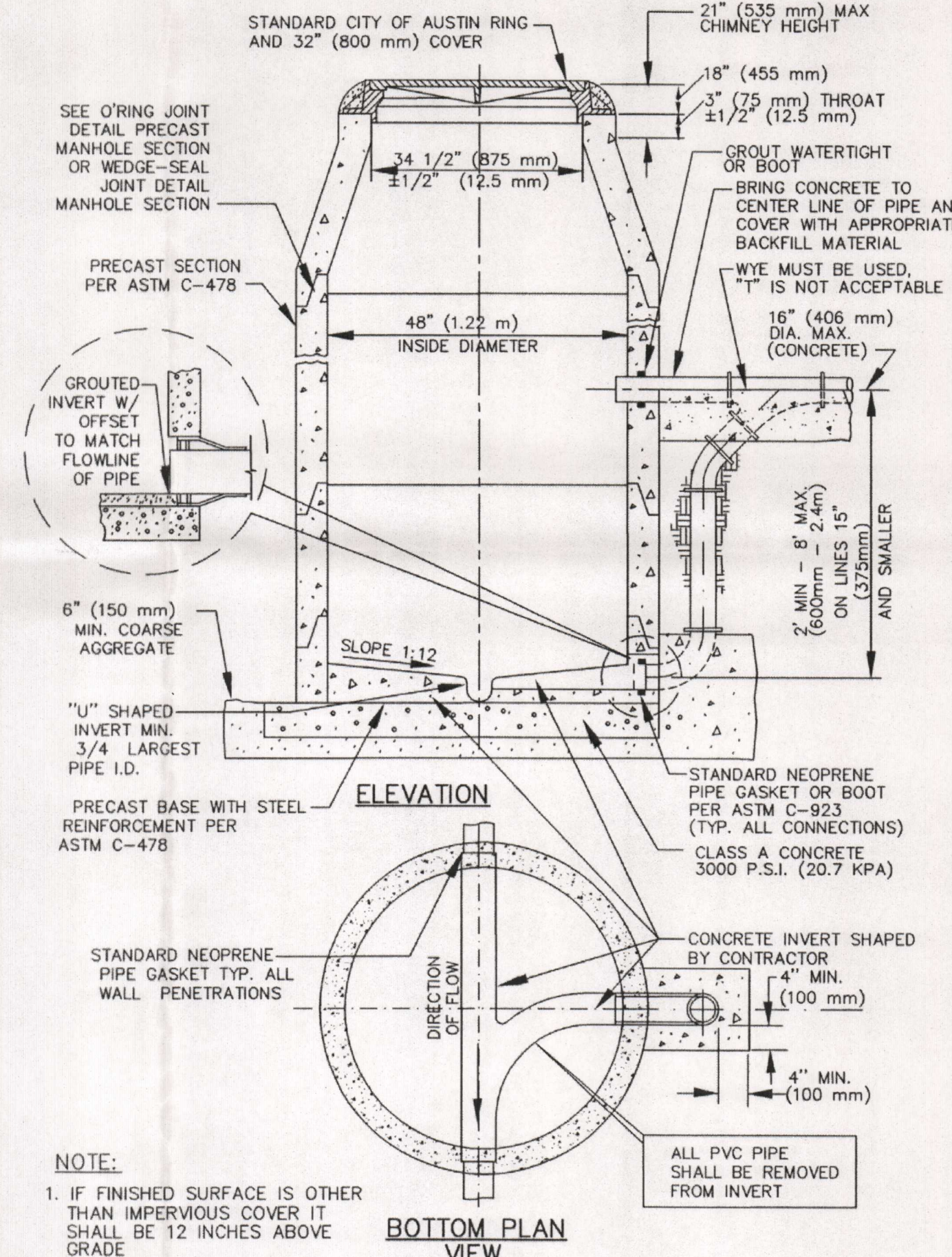
PLAN

SECTION C-C

- NOTES
1. IF PC CONCRETE IS USED AROUND THE MANHOLE, THE CONCRETE SHALL BE REINFORCED WITH NO. 5 (15 M) BARS AS SHOWN. THE CONCRETE SHALL EXTEND TO EDGE OF SAW CUT PAVEMENT EDGE.
 2. REPLACEMENT AC SURFACE LAYER SHALL BE OF THE TYPE AND THICKNESS BASED ON FUNCTIONAL CLASSIFICATION;
A) MIN. 2" (50MM) HMAC TYPE "D" FOR TRENCH REPAIR IN LOCAL/RESIDENTIAL STREETS.
B) MIN. 3" (75MM) HMAC TYPE "C" FOR TRENCH REPAIR IN COLLECTOR/ARTERIAL STREETS.

CASTING ADJUSTMENT

NOT TO SCALE

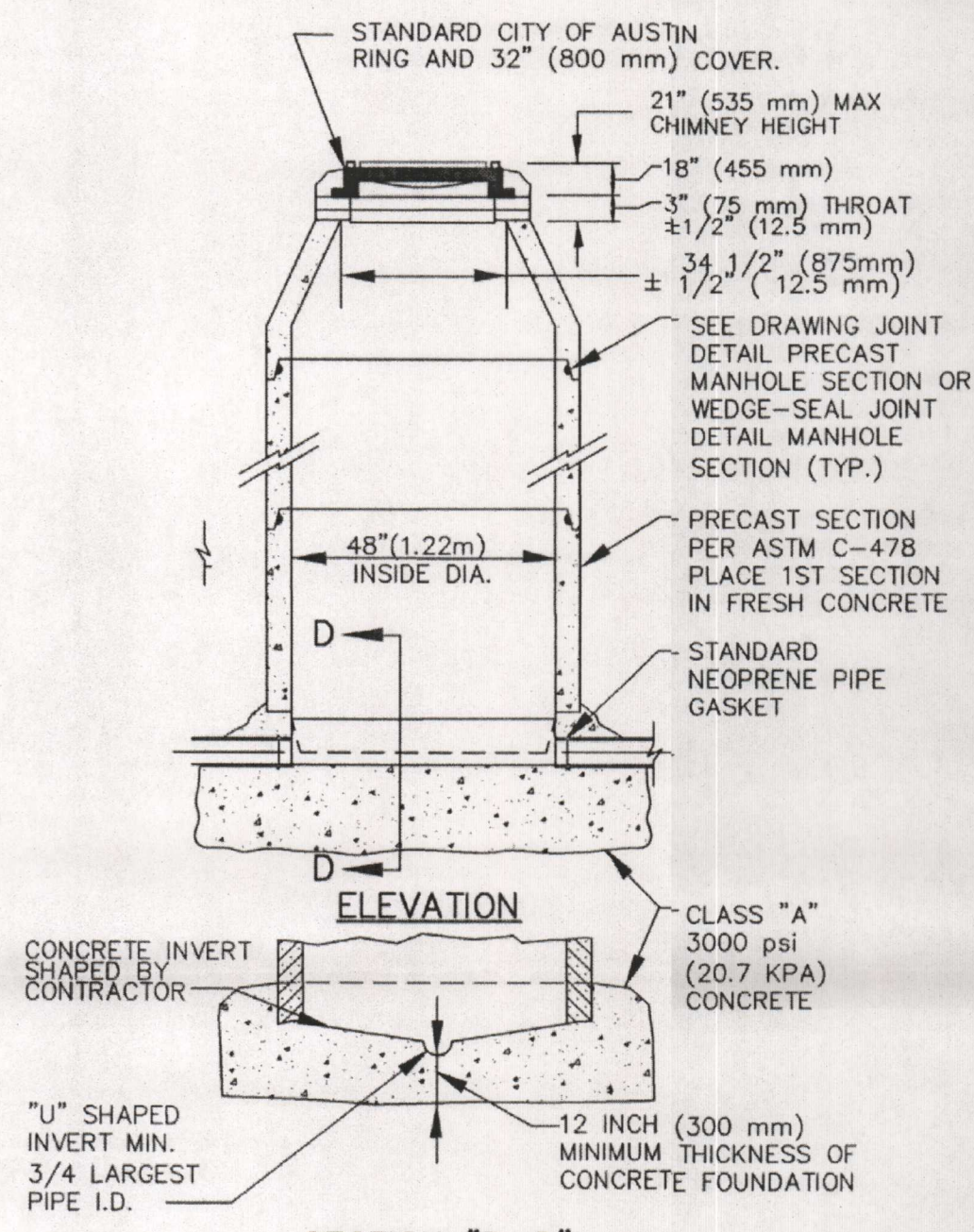


ELEVATION

BOTTOM PLAN

PRECAST MANHOLE WITH
DROP INLET ON PRECAST BASE
NOT TO SCALE

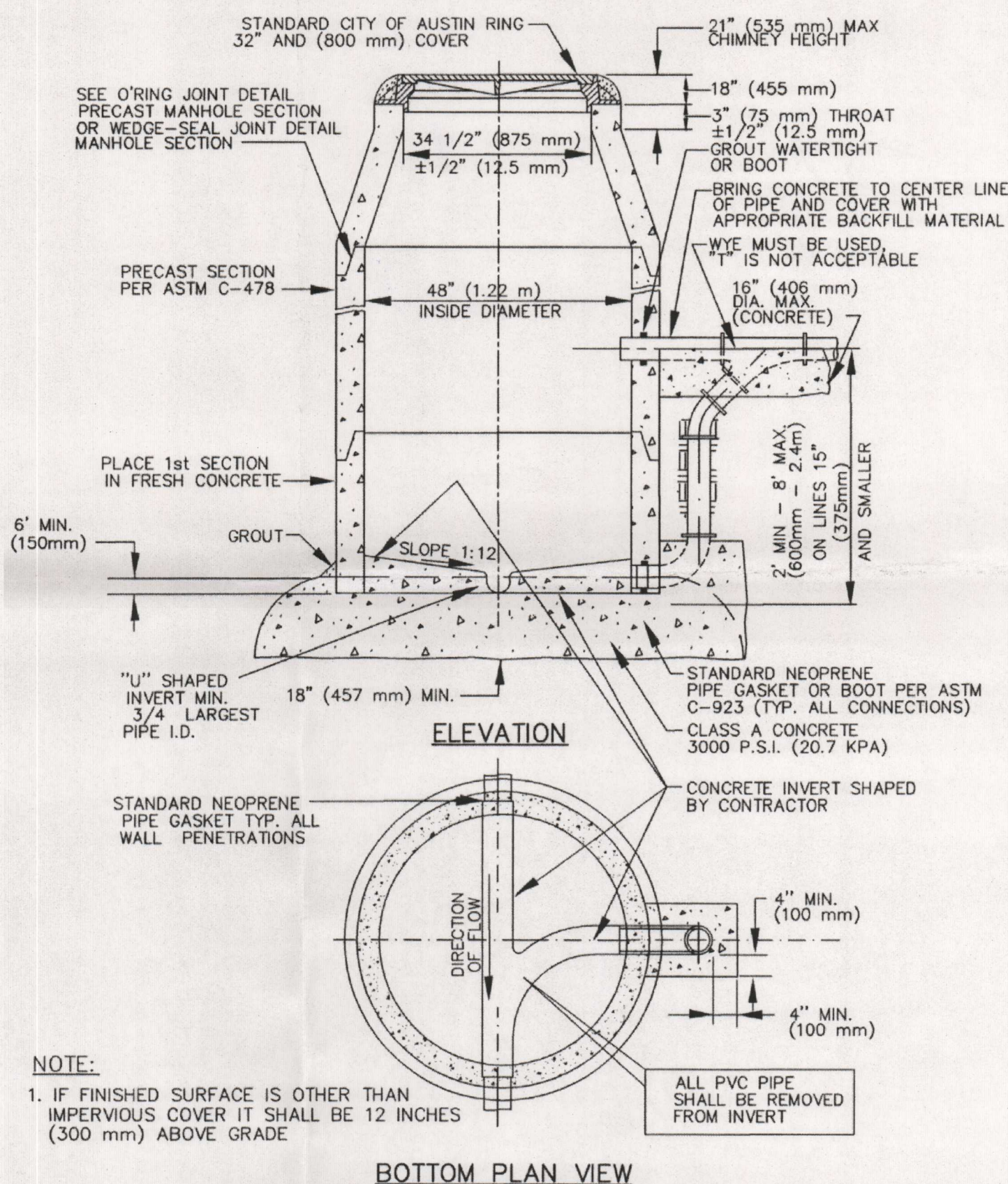
NOT TO SCALE

ELEVATION

SECTION "D-D"

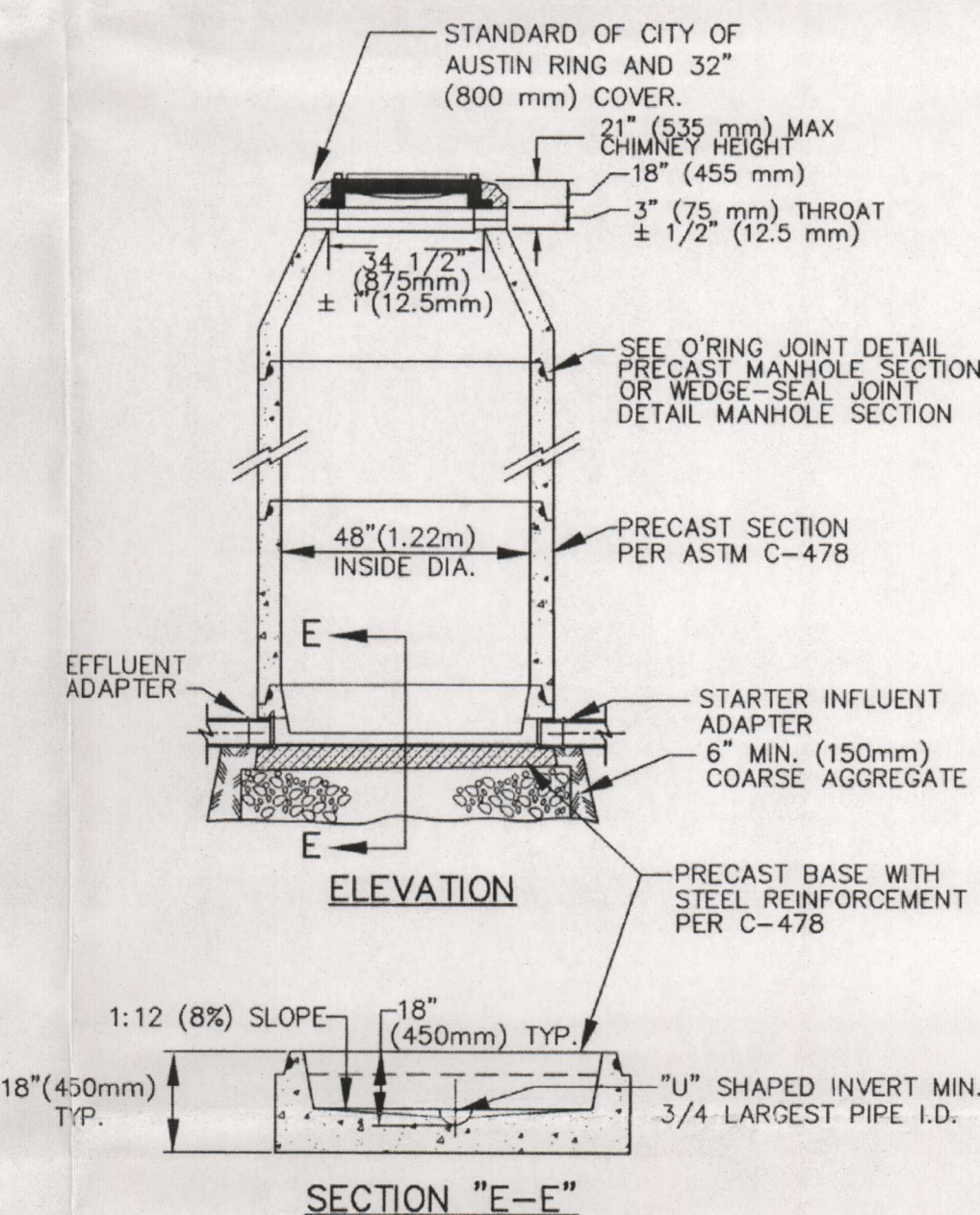
- NOTES:
1. ALL PVC PIPE SHALL BE REMOVED FROM INVERT.
 2. IF FINISHED SURFACE IS OTHER THAN IMPERVIOUS COVER IT SHALL BE 12 INCHES (300 mm) ABOVE GRADE

PRECAST MANHOLE
ON CAST-IN-PLACE FOUNDATION
NOT TO SCALE



PRECAST MANHOLE WITH DROP
INLET ON CAST-IN-PLACE FOUNDATION
NOT TO SCALE

NOT TO SCALE

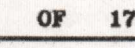


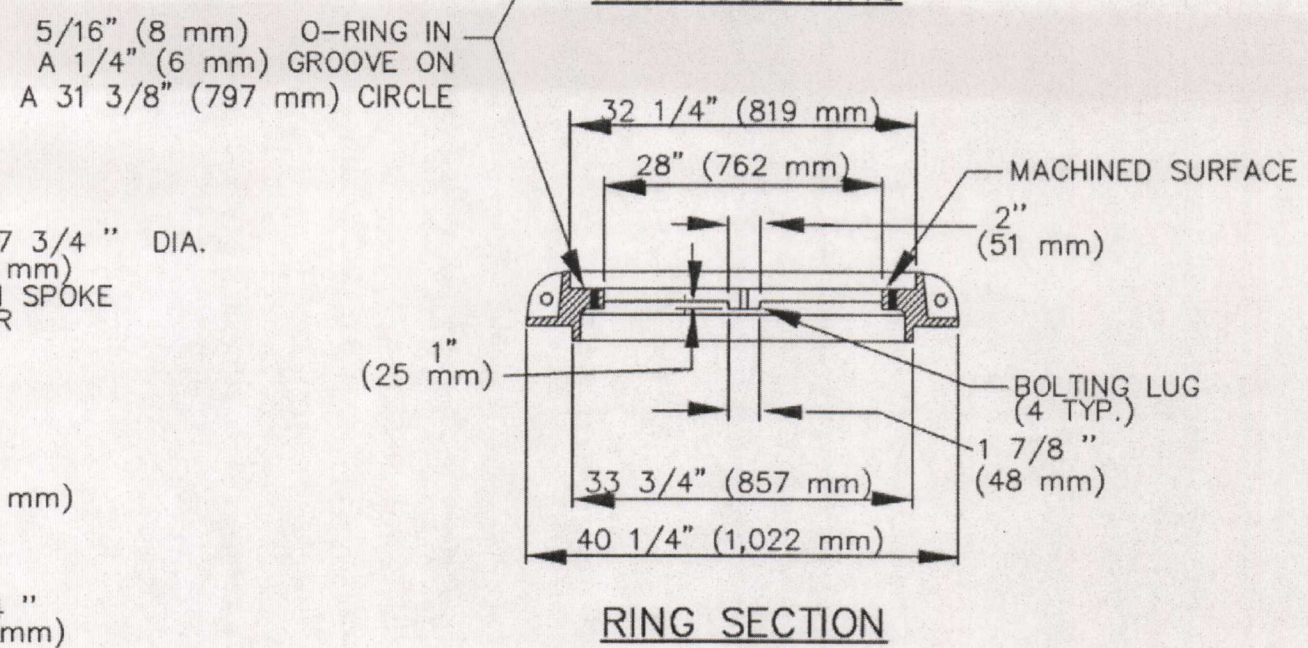
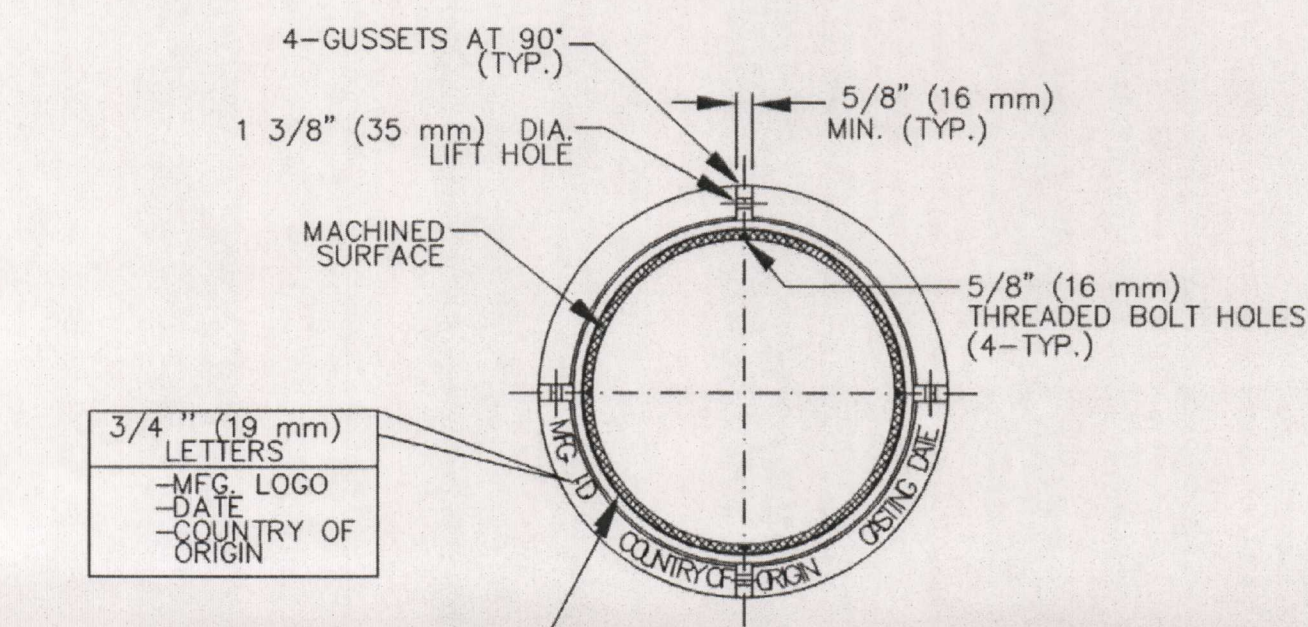
ELEVATION

SECTION "E-E"

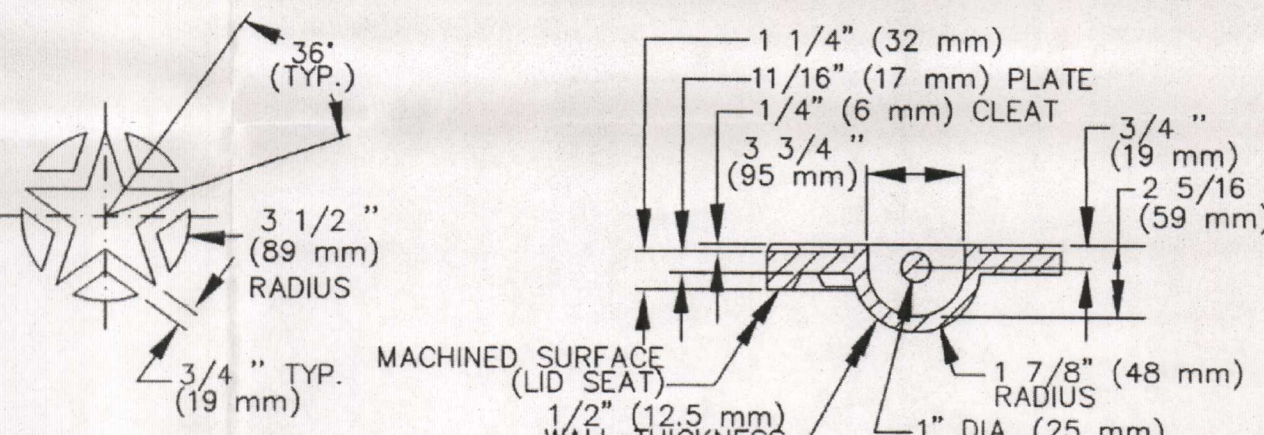
- NOTES:**
- 1) THE MANHOLE BASE SHALL BE BEDDED ON 6" (150 mm) COARSE AGGREGATE. THE CONTRACTOR SHALL LEVEL AND PLUMB THE BASE PRIOR TO SETTING THE PRECAST MANHOLE RISER SECTIONS ON THE PRECAST CONCRETE BASE.
 - 2) ALL PVC PIPES SHALL BE REMOVED FROM INVERT
 - 3) IF FINISHED SURFACE IS OTHER THAN IMPERVIOUS COVER IT SHALL BE 12 INCHES (300 mm) ABOVE GRADE.

WASTEWATER MANHOLE ON PRECAST BASE
NOT TO SCALE

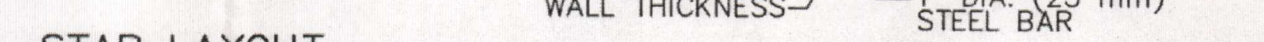




NOT TO SCALE

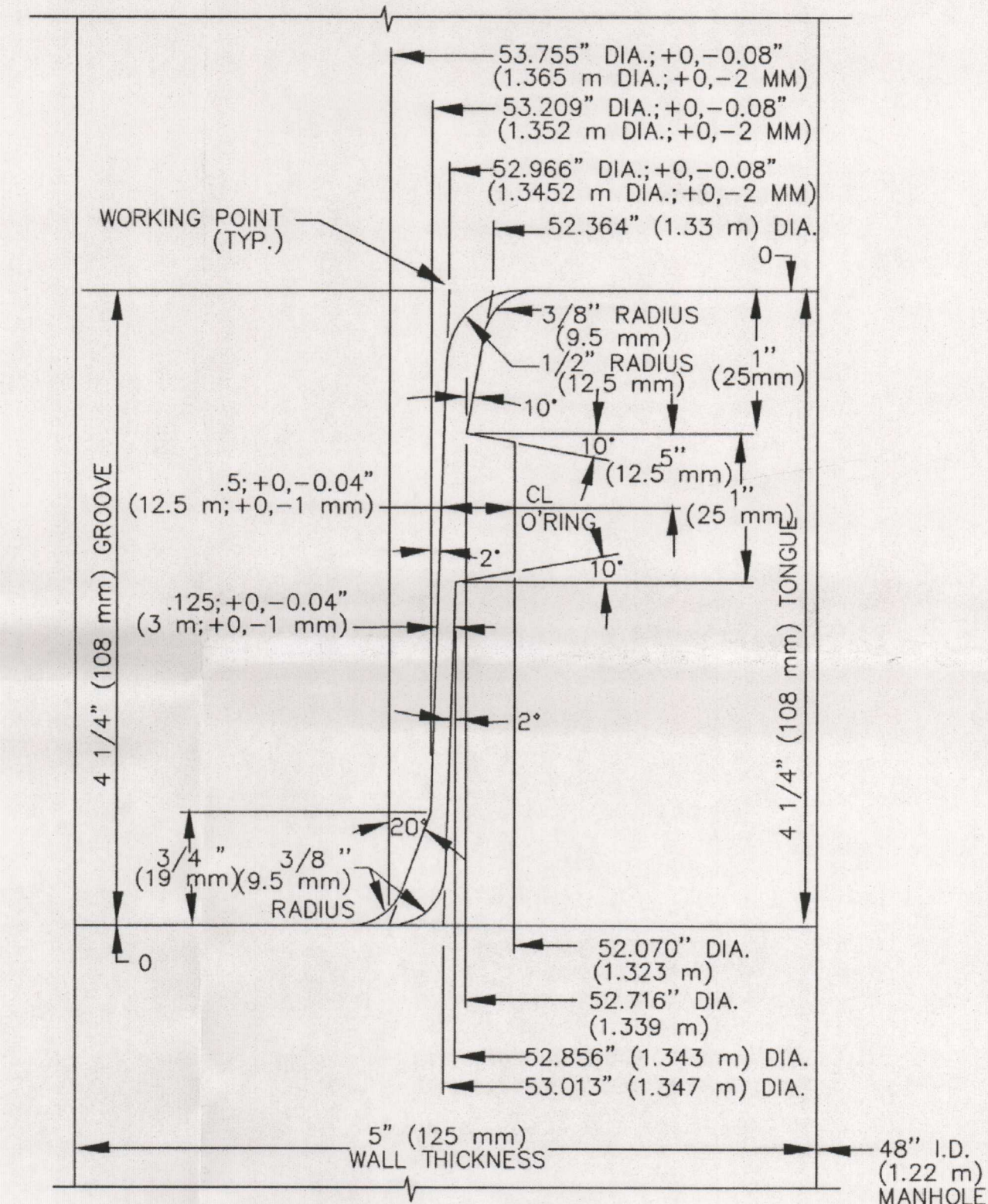


LIFT HOLE DETAIL



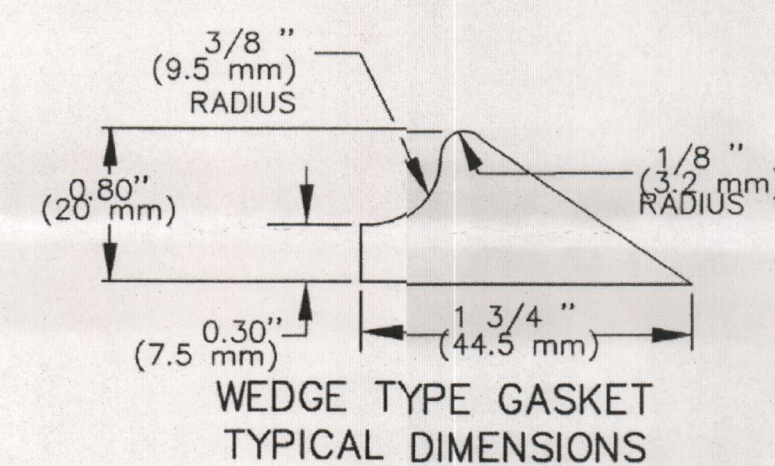
PICK BAR DETAIL

- NOTES:**
- ① ALL CORNERS AND EDGES SHALL HAVE A 1/16" (1.5 mm) MINIMUM RADIUS.
 - ② LIDS SHALL BE CAST WITH TWO 1" (25 mm) DIA. STEEL PICK BARS.
 - ③ LID WEIGHTS SHALL BE 210 LBS. (935 N) FOR CAST IRON OR 175 LBS (779 N) FOR DUCTILE IRON. WEIGHT SHALL BE CAST ON BOTH TOP AND BOTTOM OF LID.
 - ④ MANUFACTURER SHALL PROVIDE INDEPENDENT TESTING LABORATORY REPORT ON 25,000 POUND PROOF LOAD TEST CONDUCTED ACCORDING TO AASHTO M-306, (40,00 POUND FOR TxDOT RIGHT-OF-WAY).
 - ⑤ FILLETS SHALL BE 1/4" (6 mm) RADIUS UNLESS OTHERWISE SPECIFIED.
 - ⑥ MANUFACTURER SHALL REMOVE EXCESS IRON AND MACHINE FINISH SEATING SURFACES TO NOTED DIMENSIONS.
 - ⑦ BOLTS SHALL BE 5/8" x 1 3/4" (16mm x 14mm) x 11 N.C. STAINLESS STEEL HEX HEAD (TYPE 316).

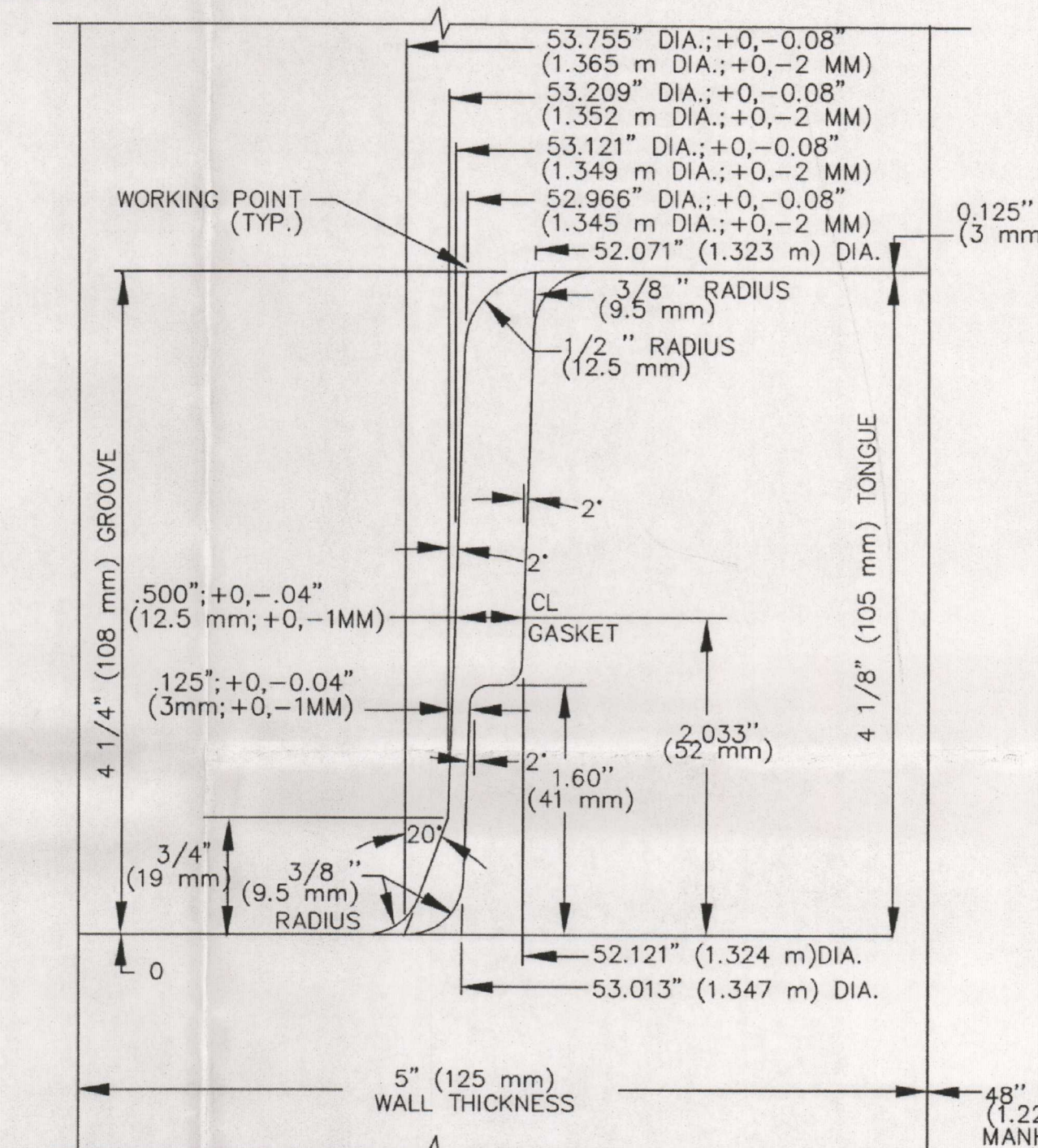


NOTE:

1. O'RING DIMENSION 25/32" (20 mm) DIA., 1013 cc VOLUME.

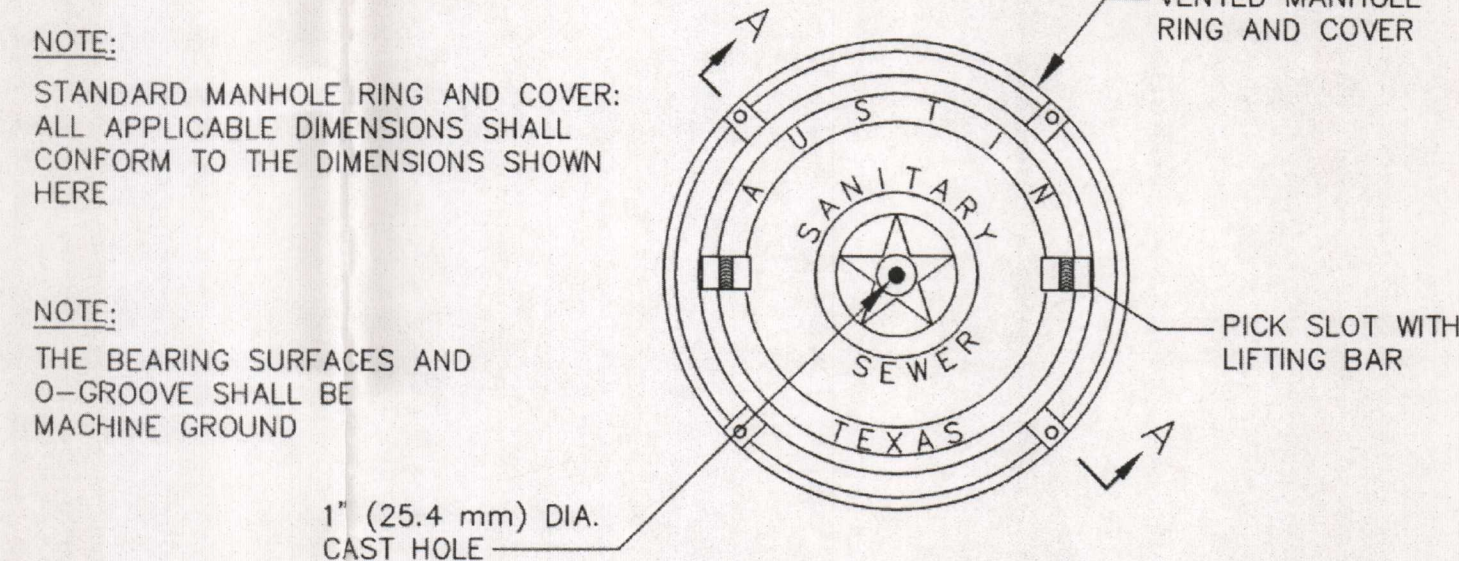


O'RING JOINT DETAIL
PRECAST MANHOLE SECTION
NOT TO SCALE

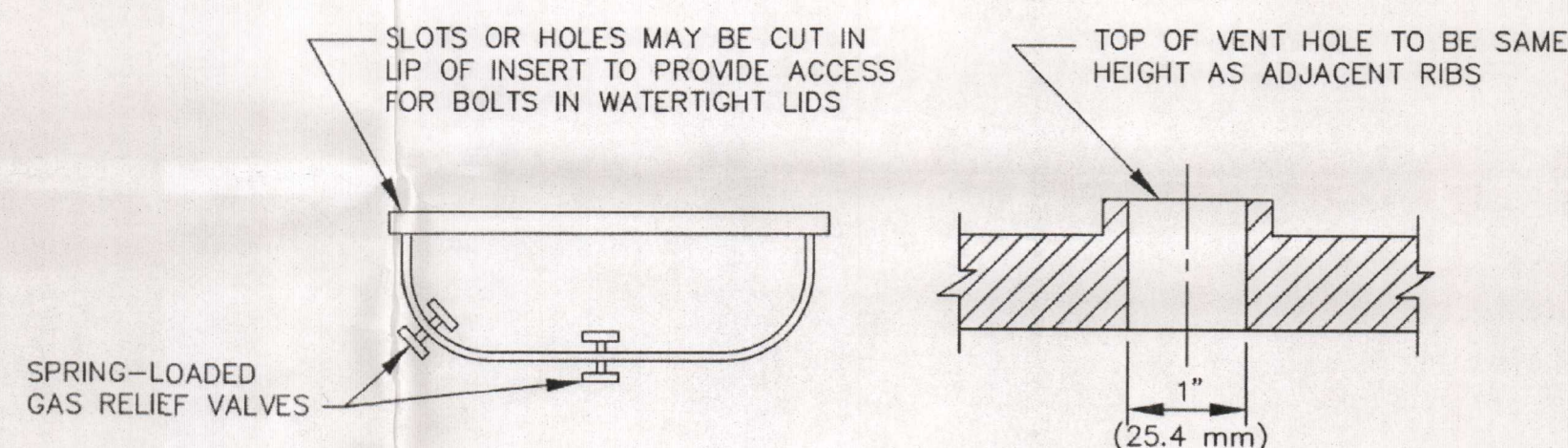


NOTE:

- GASKET STRETCH; MIN. 10, MAX. 15%.



WATERTIGHT MANHOLE
INSERT DETAIL

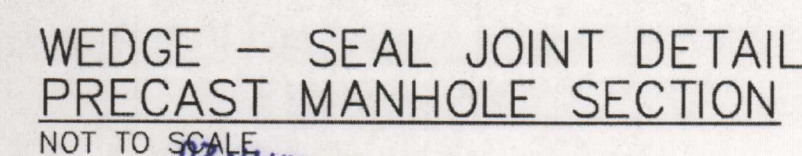


VENTED HOLE DETAIL
SECTION A-A

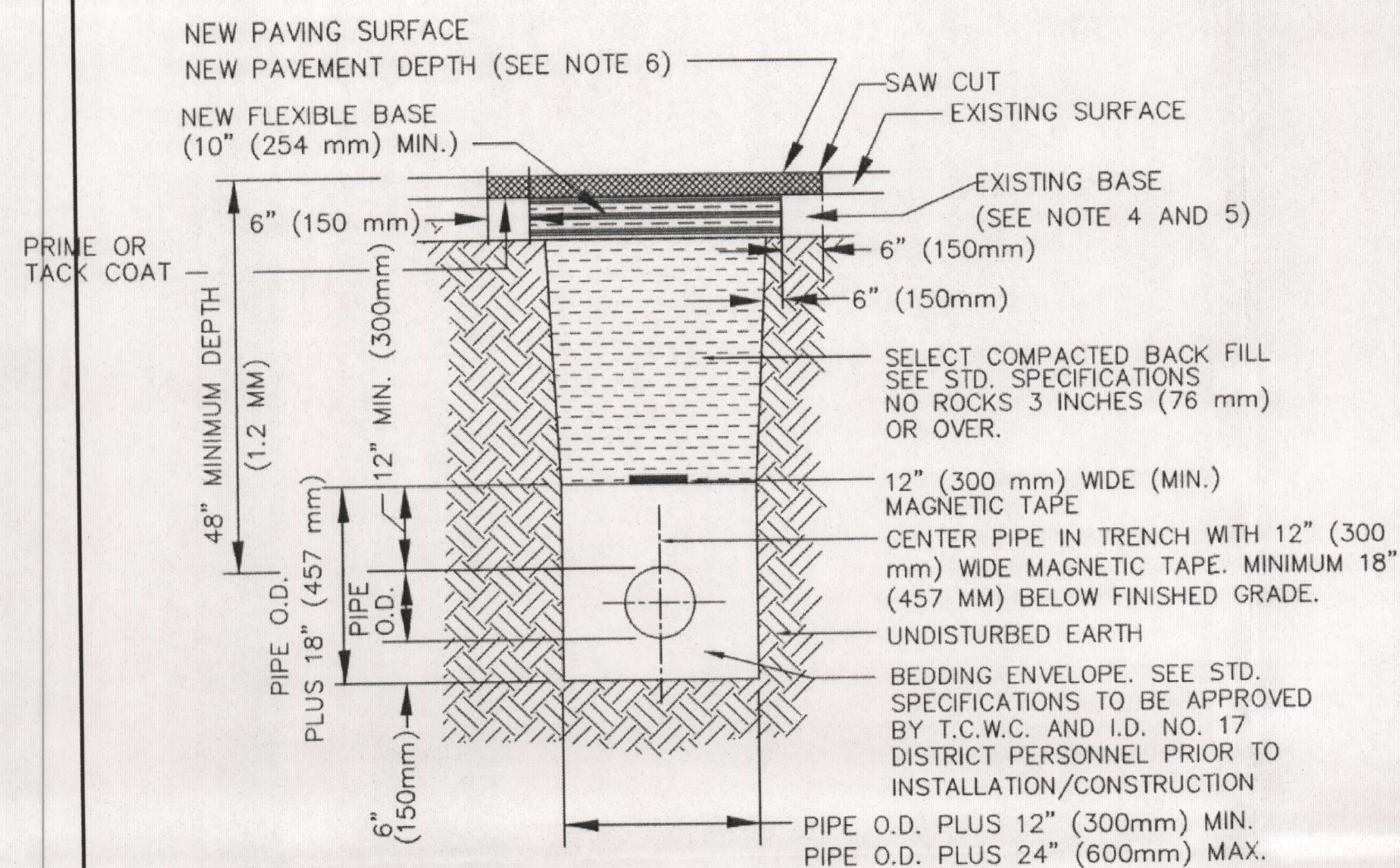
- NOTE:** MANHOLE COVER INSERTS SHALL BE FRW INDUSTRIE, INC., "INFLOW PROTECTOR-COVER", PRECO INDUSTRIES, LTD., "SEWER GUARD", OR APPROVED EQUAL, AND SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING THE NECESSARY FIELD MEASUREMENTS FOR THE MANUFACTURER PRIOR TO PRODUCTION

VENTED MANHOLE RING AND COVER DETAIL
NOT TO SCALE

NOT TO SCALE



NOT TO SCALE

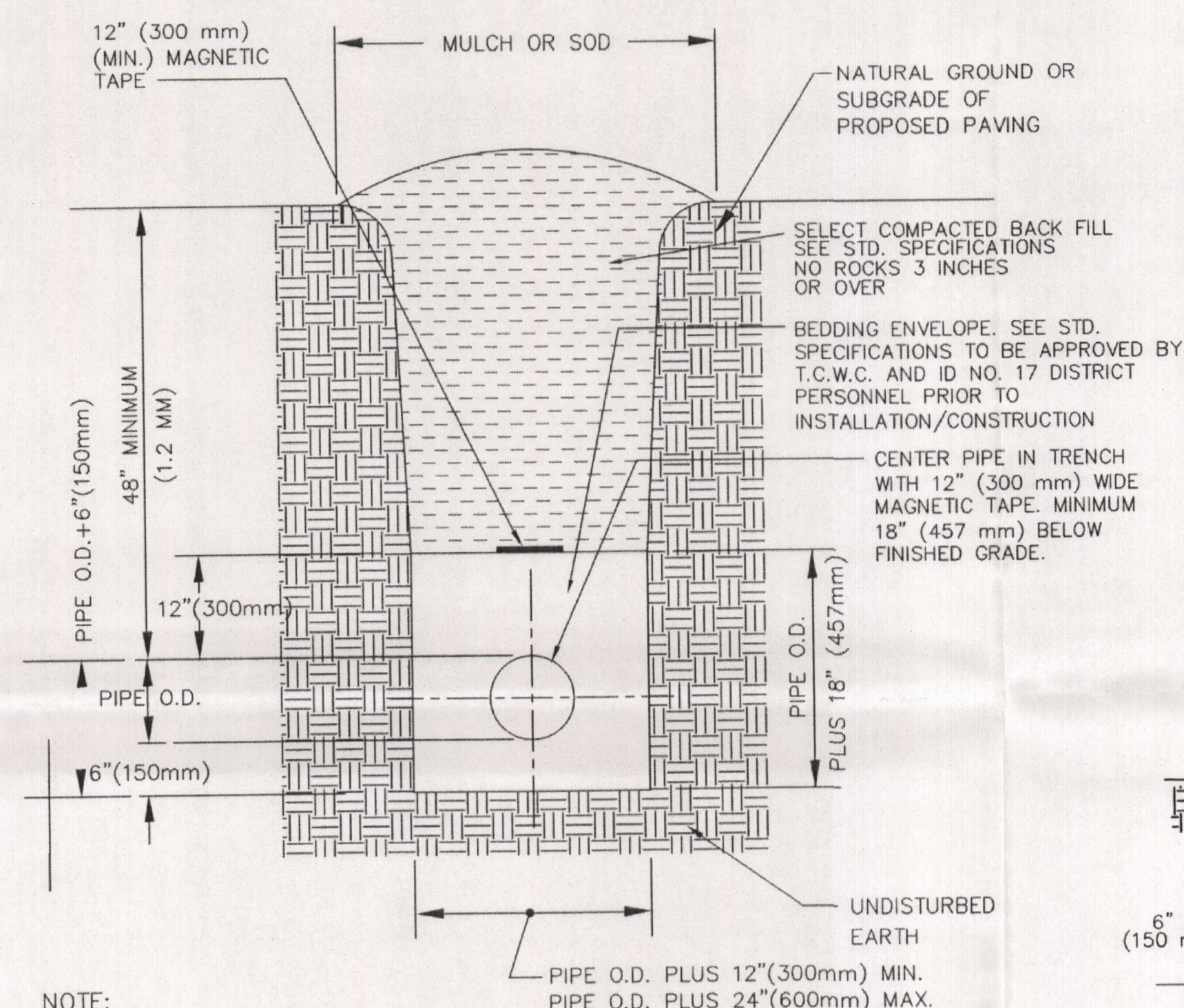


NOTES:

1. THE EXISTING PAVING SURFACE SHALL BE SAWCUT IN A STRAIGHT LINE, A MINIMUM OF 12 INCHES (300mm) WIDER THAN THE UNDISTURBED SIDES OF THE TRENCH, SYMMETRICAL ABOUT THE CENTER-LINE OF THE EXCAVATION.
2. ANY CONCRETE PAVING SHALL BE CUT 6 INCHES (150mm) WIDER THAN UNDISTURBED SIDES OF EXCAVATION.
3. IF EXCAVATION AREA IS OPEN FOR TEMPORARY PUBLIC USE, THE SURFACE SHALL BE MAINTAINED LEVEL WITH ADJACENT RIDING SURFACE WITH COLD MIX OR TEMPORARY HOT MIX ASPHALTIC CONCRETE
4. ROAD BASE AND SURFACE MATERIALS IN THE TRENCH CUT SHALL BE REPLACED IN KIND, OF EQUAL THICKNESS, OR WITH MINIMUM BASE THICKNESS OF 10 INCHES (250mm) WHICHEVER IS GREATER.
5. ALL DAMAGED AREAS OF PAVEMENT OUTSIDE THE TRENCH CUT SHALL BE REMOVED AND REPLACED WITH MINIMUM OF 8 INCHES (200mm) OF BASE OR MATCH EXISTING, WHICHEVER IS GREATER.
6. SURFACE PAVEMENT SHALL BE OF THE KIND AND THICKNESS AS EXISTING, OR MINIMUM 2 INCHES (50 mm), WHICHEVER IS GREATER.
7. ALL WASTEWATER PIPING SHALL BE COLOR CODED GREEN. NO WATER DESIGNATED PIPE WILL BE USED IN WATERWASTE.

TRENCH WITH PAVED SURFACE

NOT TO SCALE



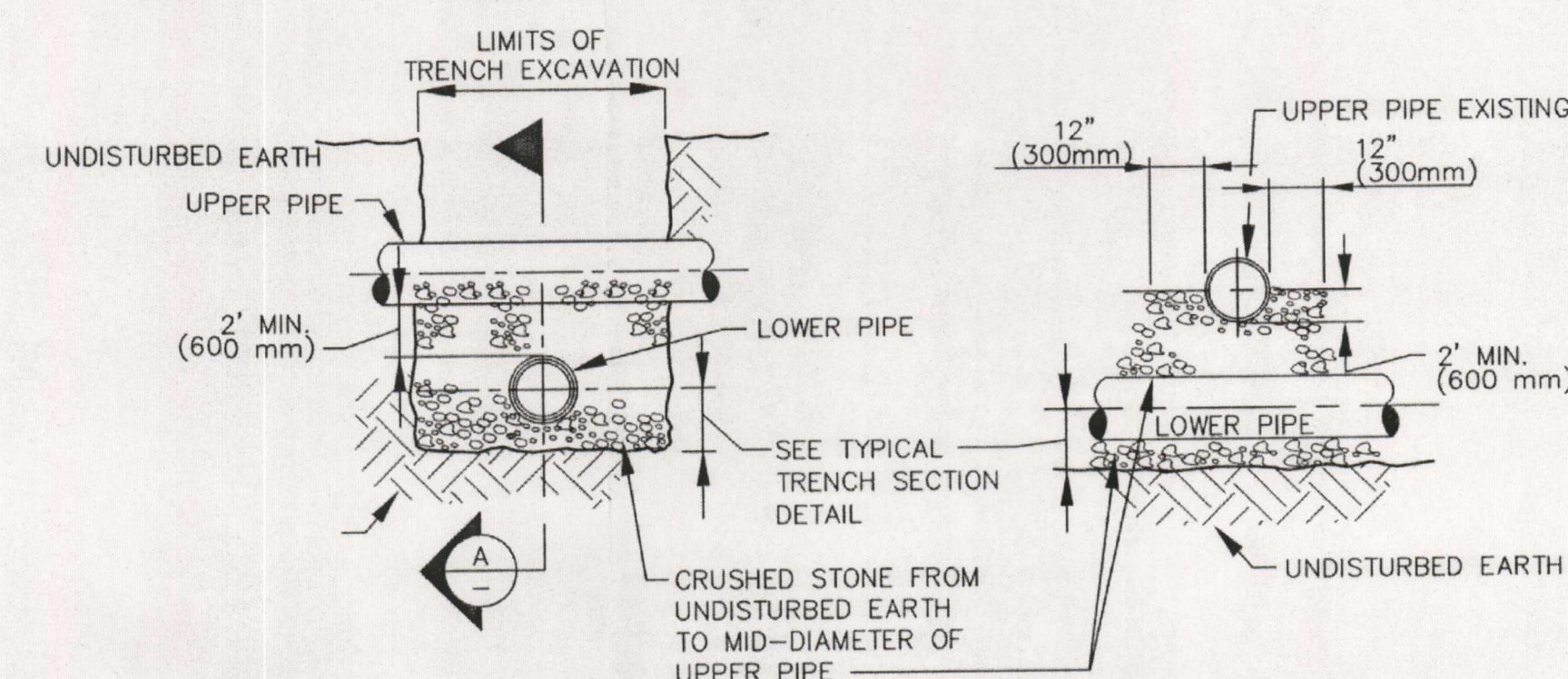
NOTE:

ALL WASTEWATER PIPING SHALL BE COLOR CODED GREEN.
NO WATER DESIGNATED PIPE WILL BE USED IN WASTEWATER.

ELEVATION

TRENCH WITH UNFINISHED SURFACE

NOT TO SCALE



TYPICAL SECTION

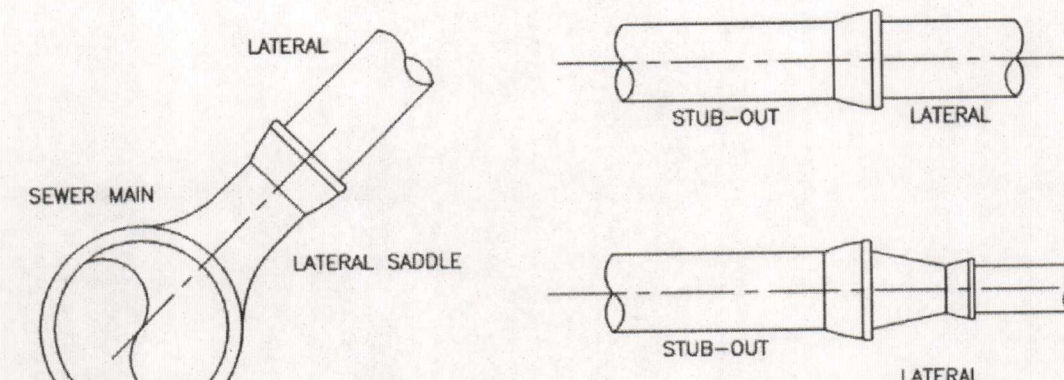
SECTION A-A

NOTES:

- 1) T.C.E.Q. RULES AND REGULATIONS ON SANITARY SEWER, STORM SEWER AND WATER MAIN CROSSINGS AND SEPARATIONS WILL BE STRICTLY ENFORCED, 30 TAC, CHAPTER 290, SUBCHAPTER D.
- 2) ALL OTHER UTILITIES TO MAINTAIN 5 FOOT (1.5 M) SEPARATION FROM WATER MAINS AND SERVICES. GAS, ELECTRIC, CABLE, ETC. TO BE LOCATED OPPOSITE SIDES OF PROPERTIES.
- 3) UTILITY CROSSINGS SEPARATED BY LESS THAN 12 INCHES (300mm), PIPES SHALL BE ENCASED WITH 6 INCHES (150mm) OF CONCRETE ALL AROUND AND CENTERED TO CROSSING FOR A MINIMUM LENGTH OF 20 FEET (6.1m) TOTAL.
- 4) SPECIFICATIONS : BEDDING MATERIAL MUST BE APPROVED BY AUTHORIZED T.C.W.C. AND I.D. No. 17 DISTRICT PERSONNEL, BEFORE START OF JOB.
- 5) AT ANY CREEK CROSSING, THE MAIN SHALL BE STEEL ENCASED AND/OR 6" (150mm) CONCRETE ENCASEMENT TO WITHIN 10 FEET (3M) OUTSIDE OF CREEK OR DRAINAGE DITCH AREA.

UTILITY CROSSINGS

NOT TO SCALE

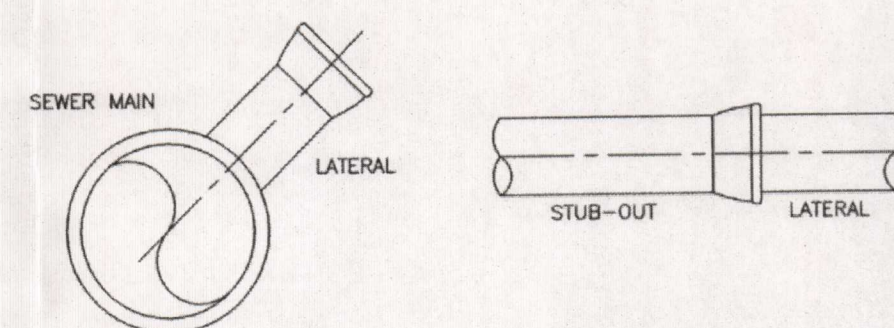


ACCEPTABLE

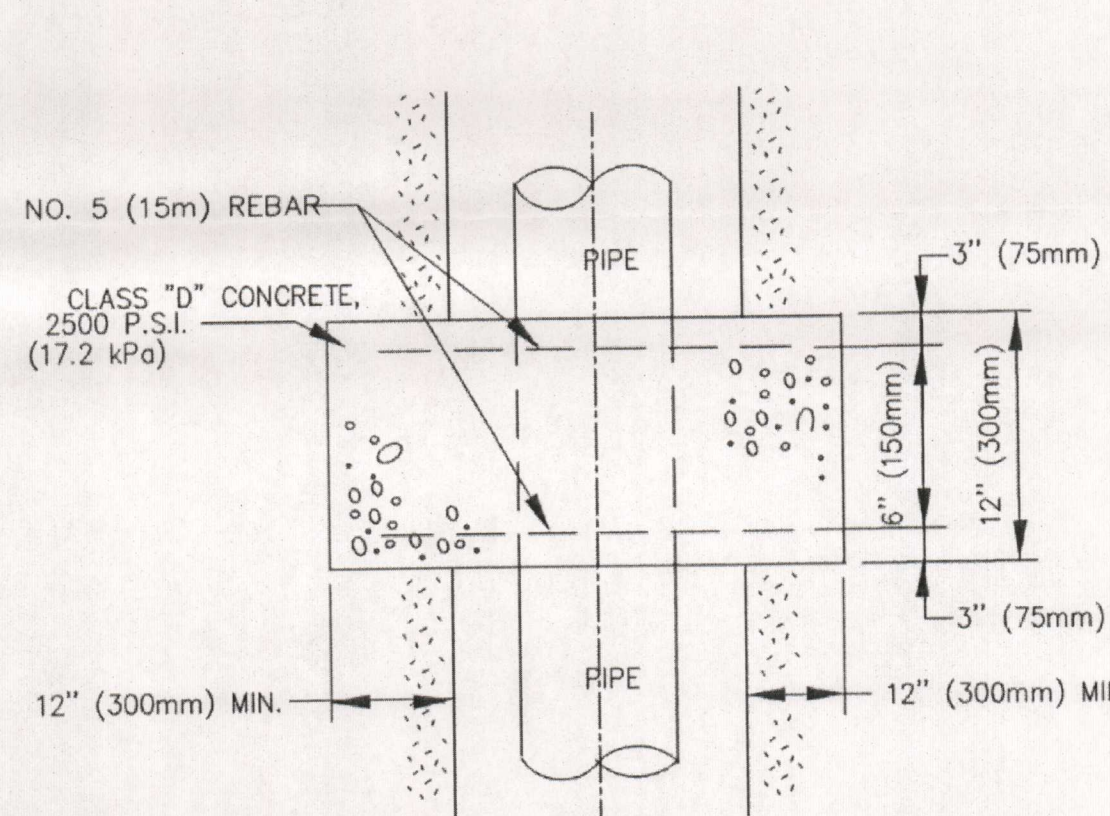
LATERAL CONNECTION TO EXISTING SEWER MAIN / STUB-OUT

N.T.S.

NOTE:
THE SADDLE SHALL BE PERMANENTLY BONDED TO THE EXISTING MAIN BY THE USE OF COMPOUNDS OR CLAMPS AS RECOMMENDED BY THE MANUFACTURERS



UNACCEPTABLE

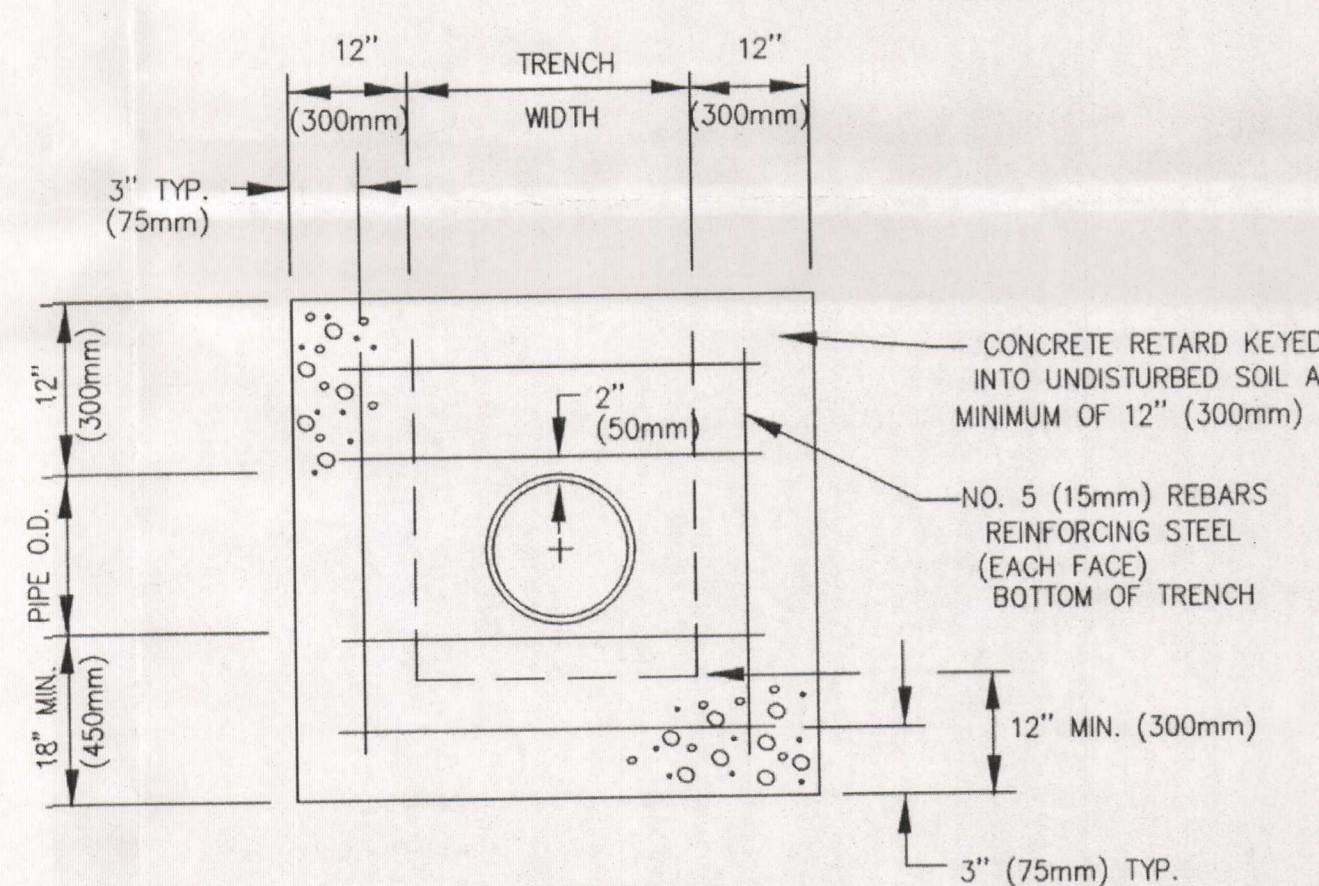


TOP VIEW

NOTE: CONCRETE RETARDS ARE TO BE USED AT ALL GRADES 10 PERCENT OR OVER (MINIMUM 20 FOOT (6 m) SPACING).

CONCRETE RETARD

NOT TO SCALE



ELEVATION

BEDDING ENVELOPE TO BE APPROVED BY T.C.W.C. AND I.D. NO. 17 DISTRICT PERSONNEL PRIOR TO INSTALLATION/CONSTRUCTION

CONCRETE CAP-CLASS D WITH 6\"/>

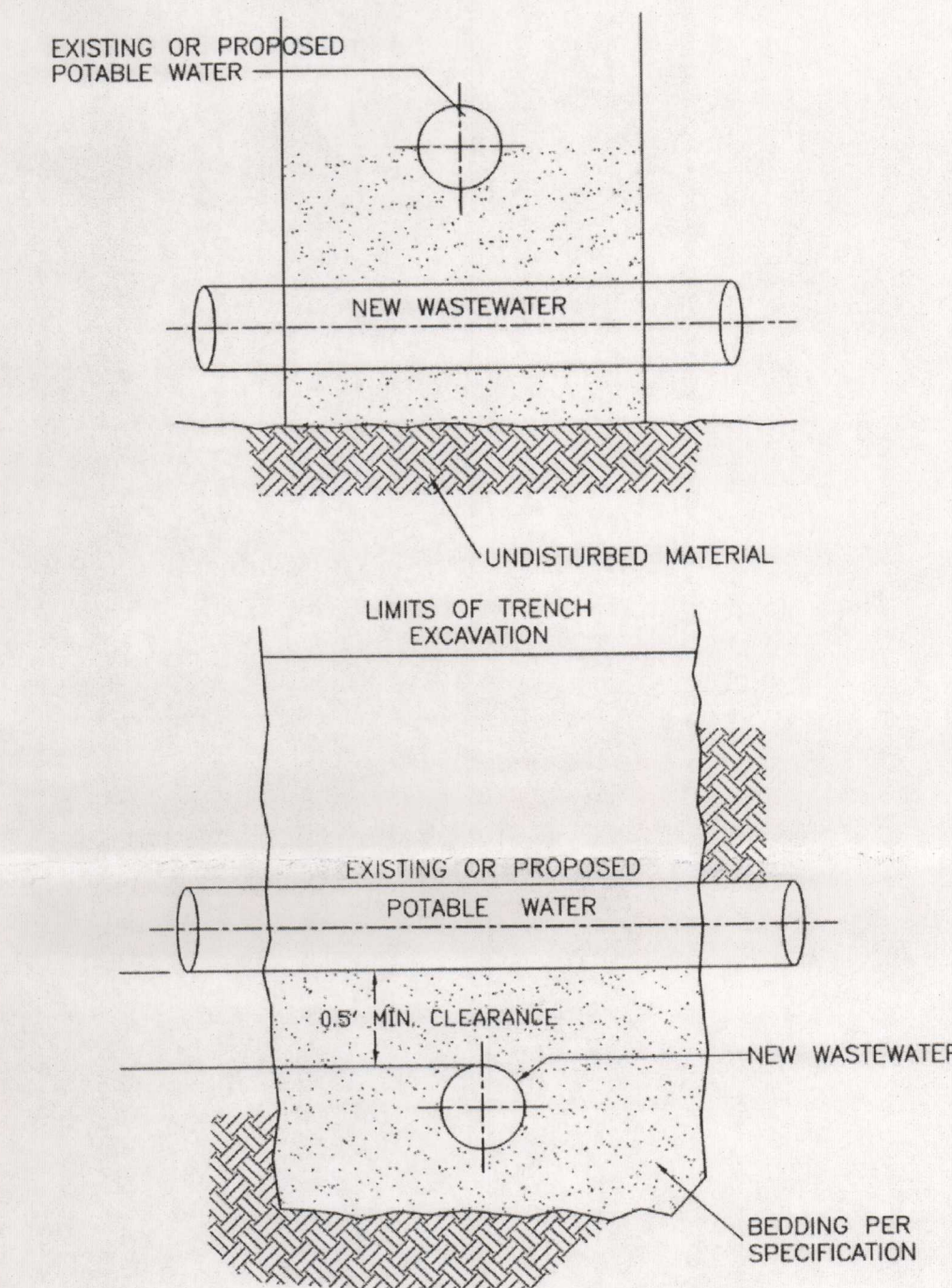
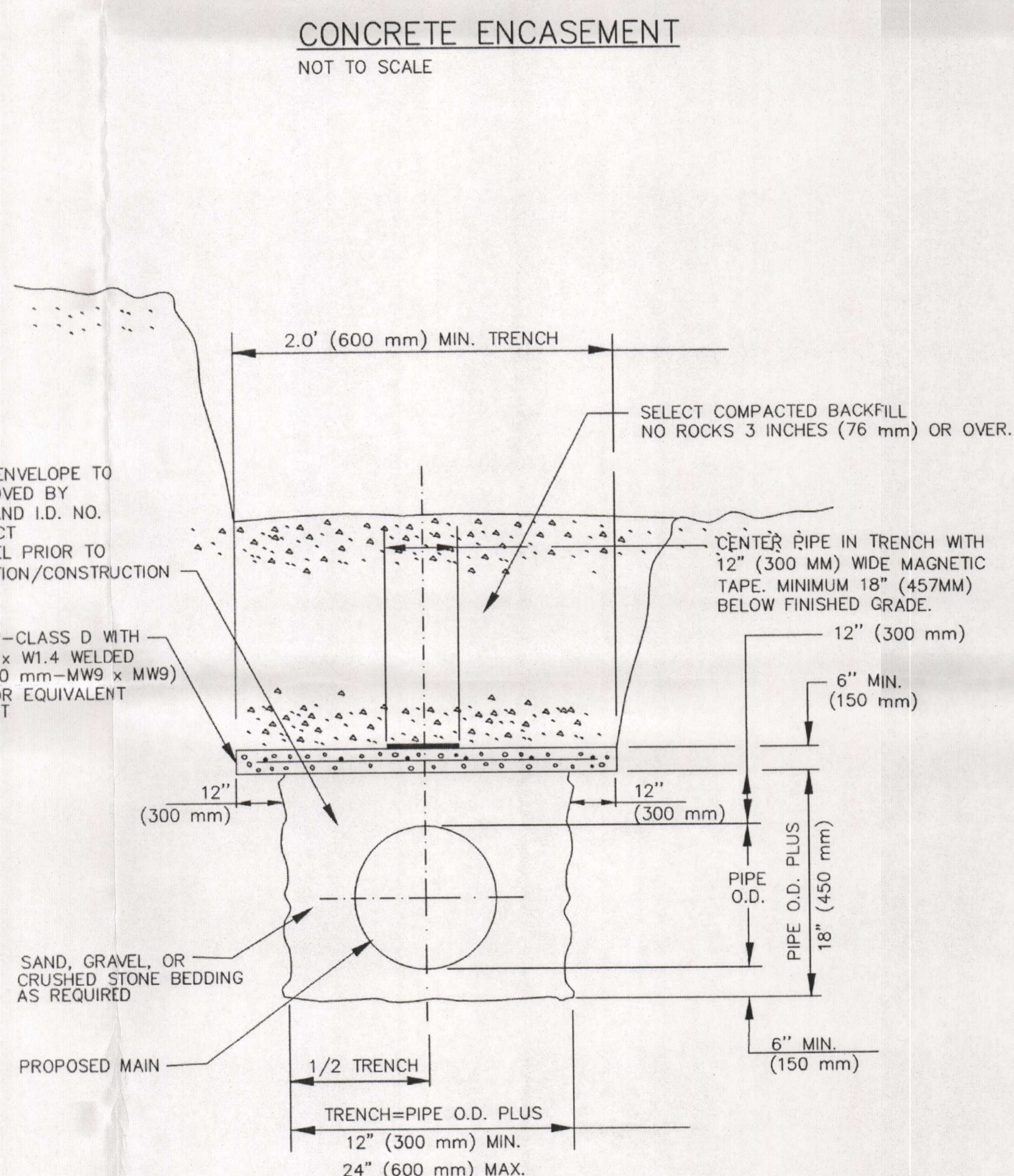
SAND, GRAVEL, OR CRUSHED STONE BEDDING AS REQUIRED

PROPOSED MAIN

TRENCH=PIPE O.D. PLUS 12\"/>

CONCRETE TRENCH CAP

NOT TO SCALE



NOTES:

1. CENTER ONE 18\"/>

WATERLINE CROSSING

N.T.S.

LOOMIS AUSTIN
ENGINEERING, LAND SURVEYING & ENVIRONMENTAL CONSULTING
3101 Bee Cave Road • Suite 100 • Austin Texas 78746
Phone: (512) 327-1180 • Fax: (512) 327-4062 • www.loomis-austin.com

JOHNSON RANCH
PHASE 1
WASTEWATER DETAILS
COMAL COUNTY WATER CONTROL AND IMPROVEMENT DISTRICT No. 1

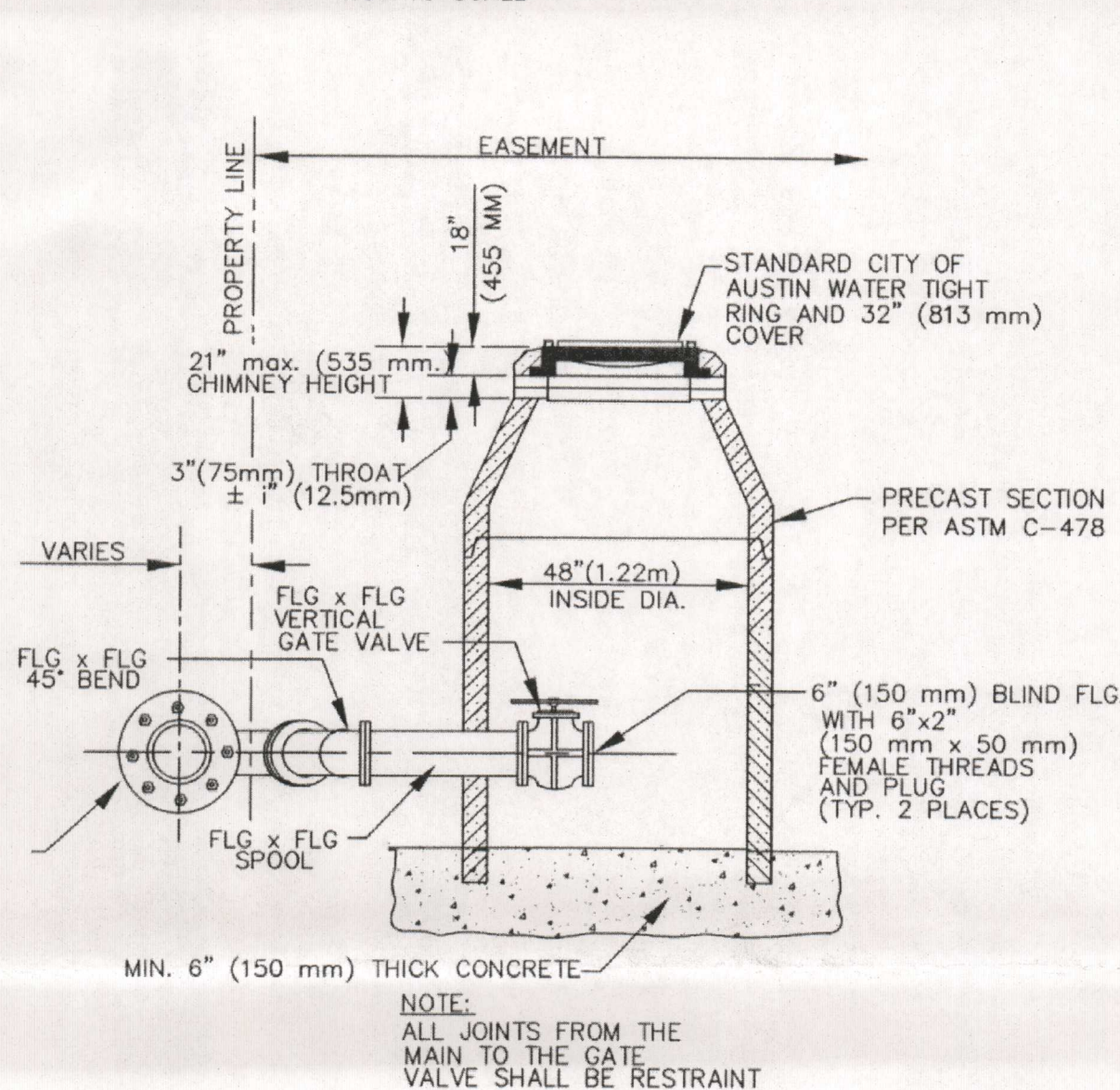
SHEET NO.

12

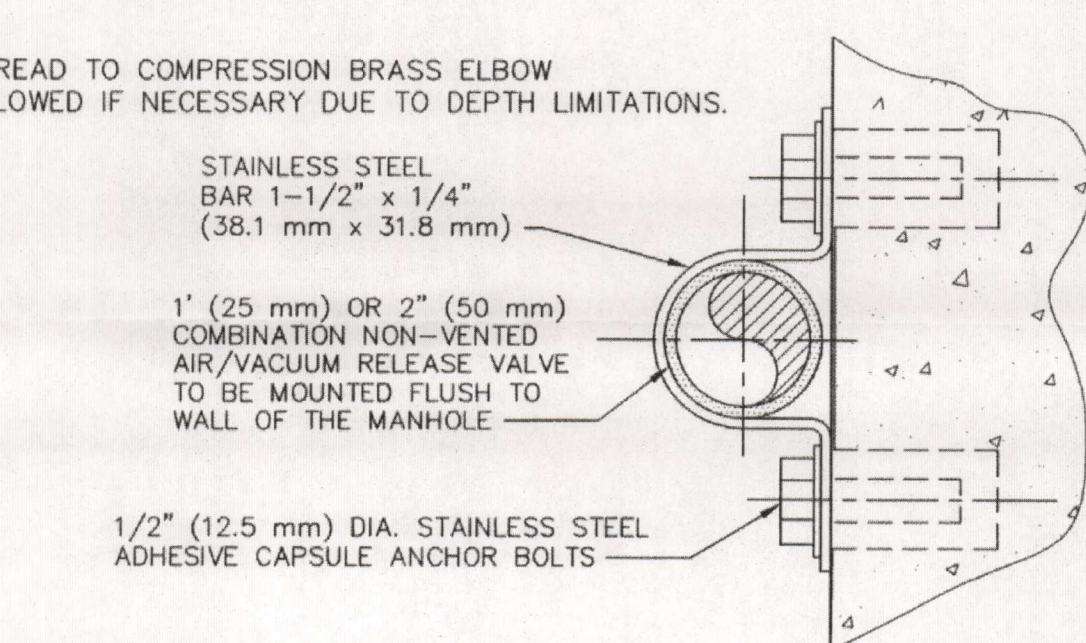
OF 17

RECEIVED TCEQ
SAN ANTONIO
2009 APR 22 AM 11:20
DESIGNED BY: C.W.K.
DRAWN BY: S.T.
CHECKED BY: J.R.
APPROVED BY: C.W.K.
DATE: March 2009

1. ALL JOINTS FROM THE MAIN TO THE VERTICAL GATE VALVE SHALL BE RESTRAINT JOINT.
2. ALL PIPE SHALL BE DUCTILE IRON A MINIMUM OF 12" PAST MANHOLE OR VAULT.



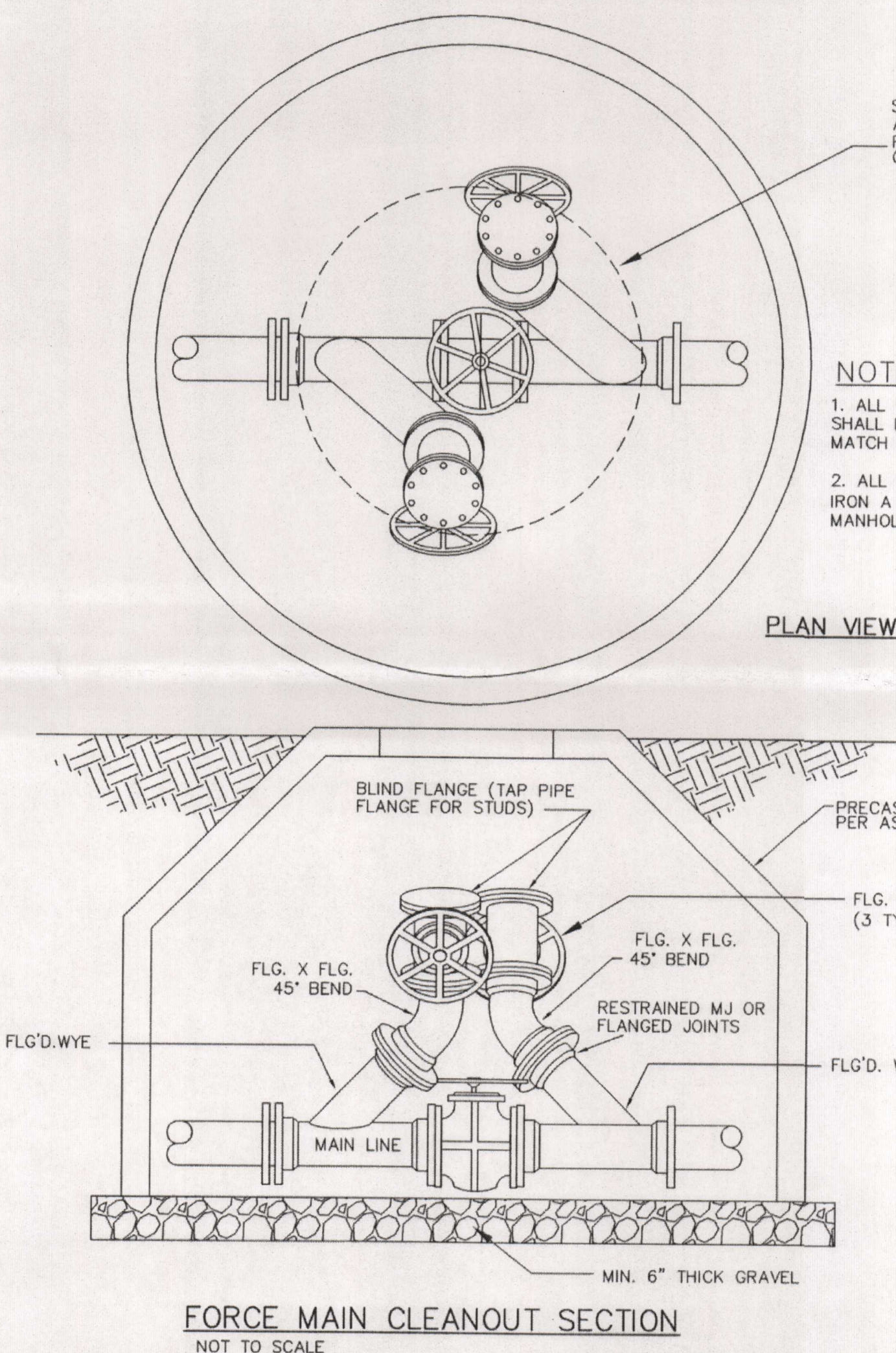
SPECIAL CONDITION FORCE MAIN CLEANOUT
DETAIL-SECTION
NOT TO SCALE



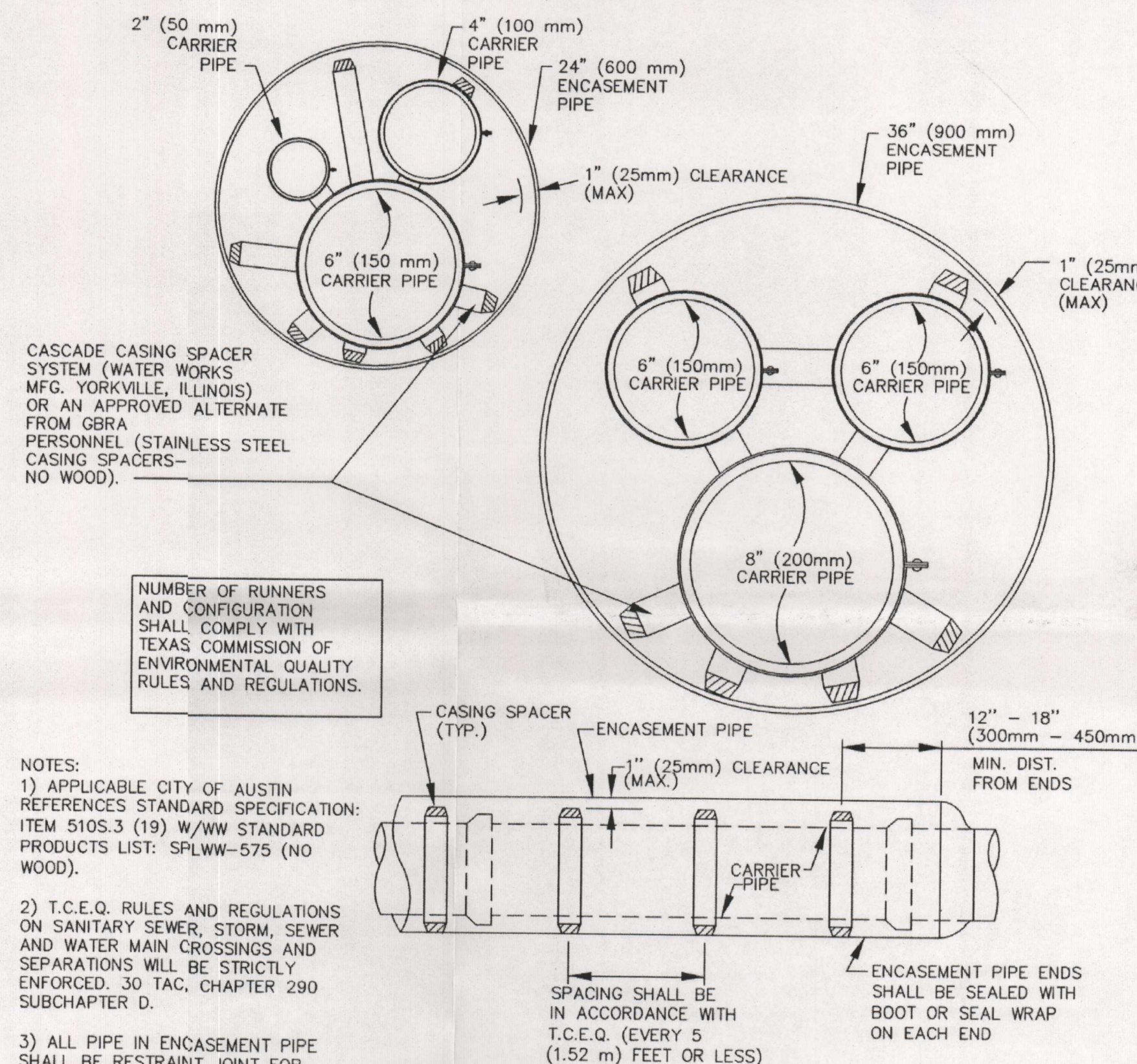
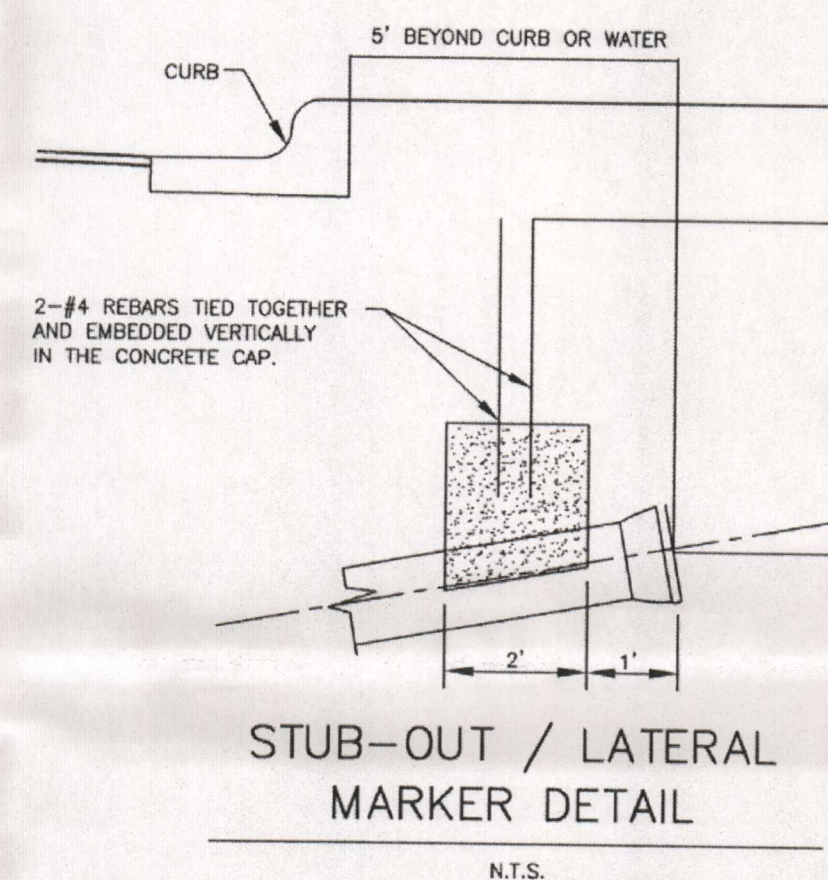
1. PIPE CLAMP, WASHER AND SHIELD SHALL BE TYPE 316 STAINLESS STEEL.
2. WHEN USED WITH PVC OR FIBERGLASS PIPE, PROVIDE STAINLESS STEEL SHIELD AROUND PIPE AT CLAMP WITH LOOSE FIT.

PIPE CLAMP

1" (25 mm) -2" (50 mm) COMBINATION
NON-VENTED, AUTOMATIC AIR/VACUUM RELEASE
VALVE INSTALLATION (TYPE 1) (FORCE MAIN)
NOT TO SCALE



1. ALL CLEANOUTS IN ROADWAY SHALL BE INSTALLED FLUSH TO MATCH ROAD SURFACE.
2. ALL PIPE SHALL BE DUCTILE IRON A MINIMUM OF 12" PAST MANHOLE OR VAULT.

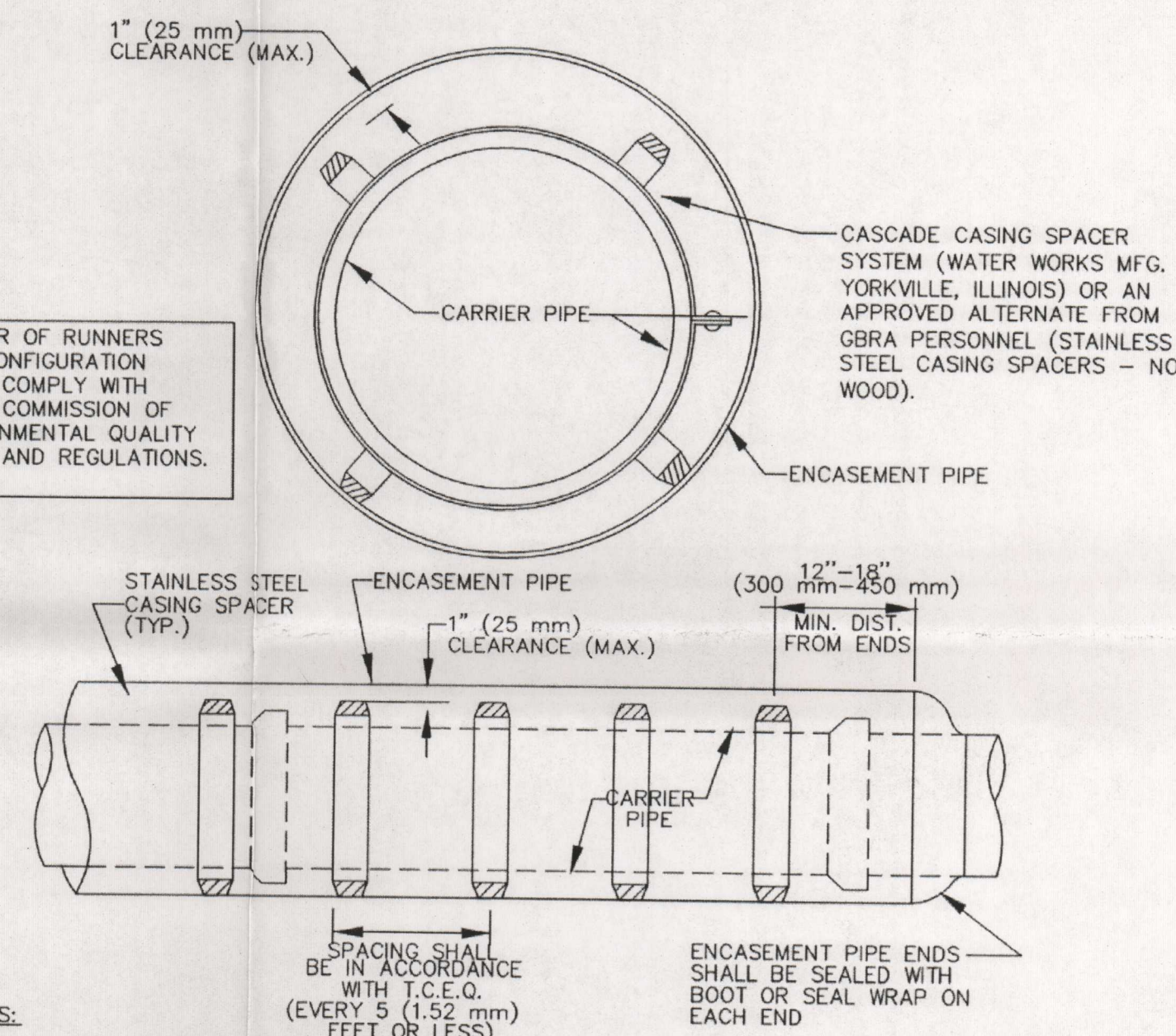


NOTES:
1) APPLICABLE CITY OF AUSTIN
REFERENCES STANDARD SPECIFICATION:
ITEM 510S.3 (19) W/WW STANDARD
PRODUCTS LIST: SPLWW-575 (NO
WOOD).

2) T.C.E.Q. RULES AND REGULATIONS ON SANITARY SEWER, STORM, SEWER AND WATER MAIN CROSSINGS AND SEPARATIONS WILL BE STRICTLY ENFORCED. 30 TAC, CHAPTER 290 SUBCHAPTER D.

3) ALL PIPE IN ENCASEMENT PIPE SHALL BE RESTRAINT JOINT FOR ENTIRE LENGTH OF THE ENCASEMENT PIPE, PLUS 10 (3.05 mm) FEET OF EACH SIDE.

ENCASEMENT DETAIL AND MULTIPLE CARRIERS W/CASING SPACES



NUMBER OF RUNNERS
AND CONFIGURATION
SHALL COMPLY WITH
TEXAS COMMISSION OF
ENVIRONMENTAL QUALITY
RULES AND REGULATIONS.

- 1) APPLICABLE CITY OF AUSTIN REFERENCES
STANDARD SPECIFICATION ITEM 5103.3 (19) W/WW STANDARD PRODUCTS LIST: SPLWW-575 (NO WOOD)
- 2) T.C.E.Q. RULES AND REGULATIONS ON SANITARY SEWER, STORM, SEWER AND WATER MAIN CROSSINGS AND SEPARATIONS WILL BE STRICTLY ENFORCED. 30 TAC, CHAPTER 290 SUBCHAPTER D.
- 3) ALL PIPE IN ENCASEMENT PIPE SHALL BE RESTRAINT JOINT FOR ENTIRE LENGTH OF THE ENCASEMENT PIPE PLUS 10 FEET (3.05 m) ON EACH SIDE.
- 4) FOR A PIPE 20' IN LENGTH, A MINIMUM OF 5 SPACERS IS REQUIRED.

ENCASEMENT DETAIL W/ CASING SPACERS
NOT TO SCALE

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Phone: (512) 327-1180 • Fax: (512) 327-4062 • www.loomisaustin.com

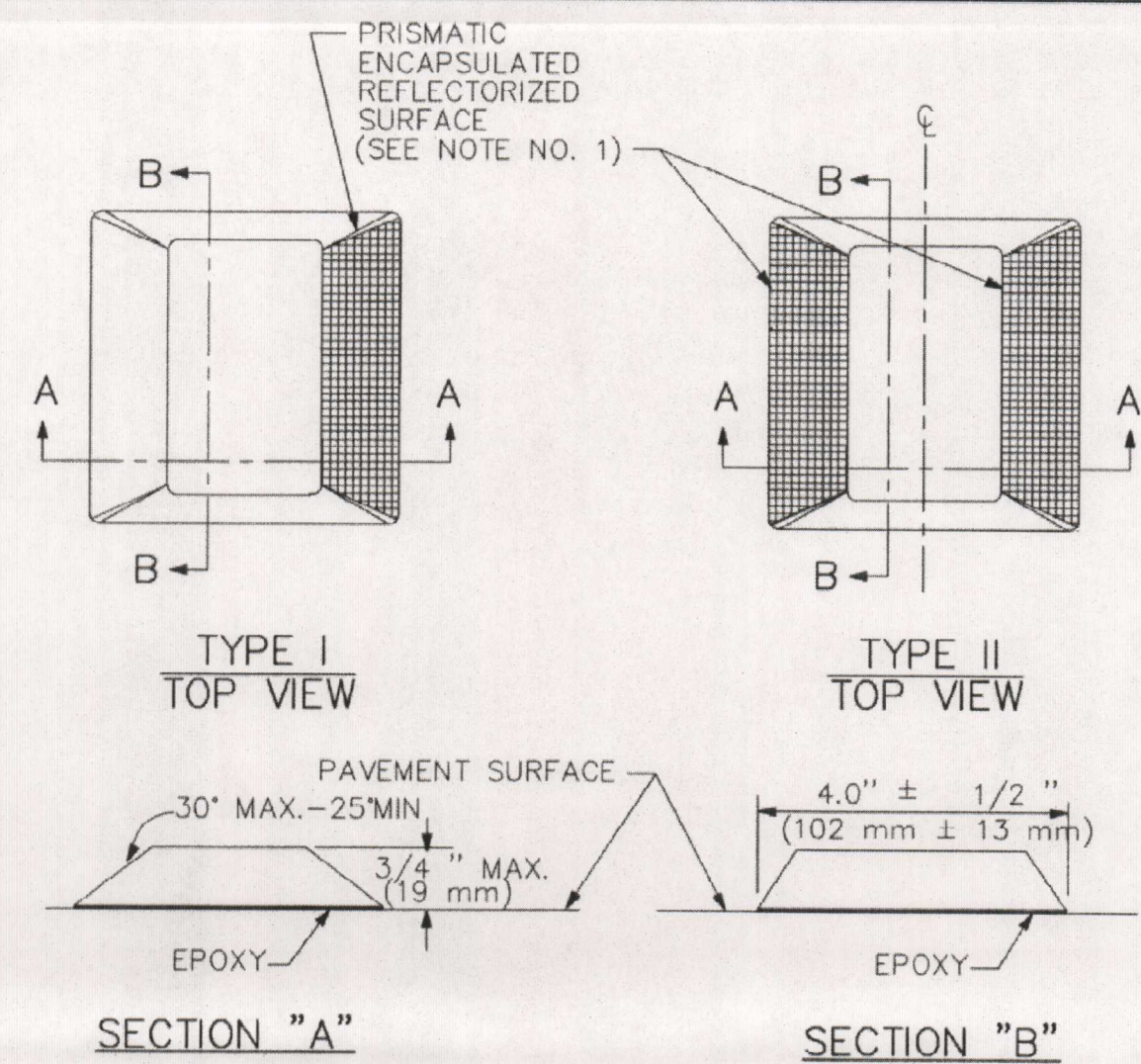
LOOMIS
AUSTIN

**JOHNSON RANCH
PHASE 1
WASTEWATER DETAILS
COMAL COUNTY WATER CONTROL AND
IMPROVEMENT DISTRICT**

SHEET NO.

13

OF 17

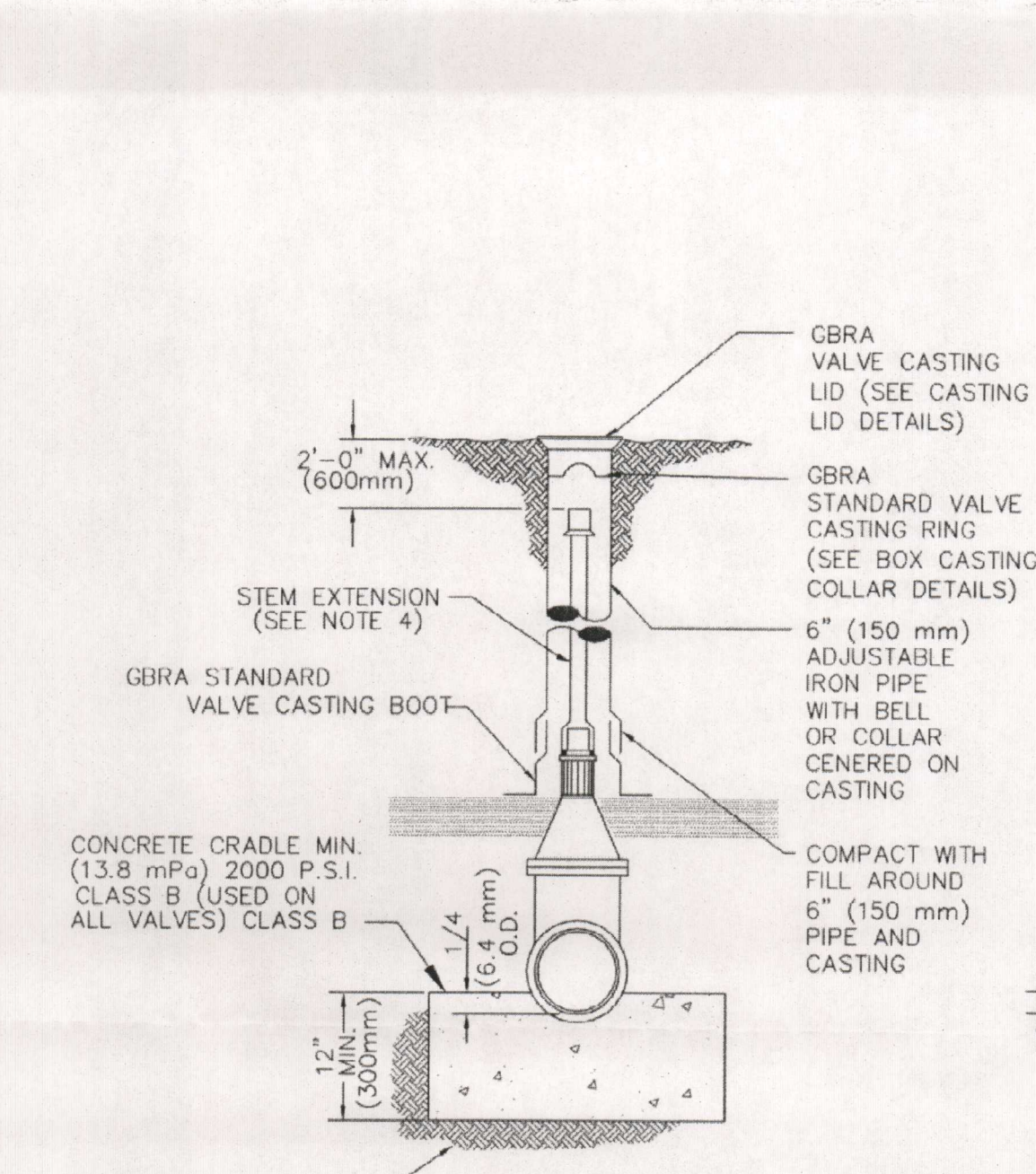


NOTE:
MINIMUM AREA OF MARKER EXPOSED TO TRAFFIC SHALL NOT BE LESS THAN 12.5 SQUARE INCHES. (800 SQUARE MILLIMETERS).

NOTES:

- 1) RED - FORCE MAIN AIR RELEASE VALVES
ORANGE - FORCE MAIN VALVES
- 2) ADHESIVE SHALL BE APPLIED IN SUFFICIENT TO ENSURE THE FOLLOWING:
a) 100 PERCENT OF THE BONDING AREA OF RAISED PAVEMENT MARKERS SHALL BE IN CONTACT WITH THE ADHESIVE.
b) RAISED PAVEMENT MARKERS SHALL NOT BE IN CONTACT WITH THE PAVEMENT SURFACE, BUT SHALL BE SEATED ON A CONTINUOUS LAYER OF ADHESIVE.
c) BITUMINOUS ADHESIVE FOR MARKERS ON BITUMINOUS PAVEMENTS. EPOXY ADHESIVE FOR MARKERS ON PORTLAND CEMENT CONCRETE PAVEMENTS. EPOXY ADHESIVE SHALL BE MACHINE MIXED.
- 3) RAISED PAVEMENT MARKERS SHALL BE FREE OF RUST, SCALE, DIRT, OIL, GREASE, MOISTURE, OR CONTAMINATES WHICH MIGHT ADVERSELY AFFECT THE ADHESIVE BOND. ADHESIVE OR ANY OTHER MATERIAL THAT IMPAIRS THE FUNCTIONAL REFLECTIVITY WILL NOT BE ACCEPTABLE.
- 4) PLACEMENT OF RAISED PAVEMENT MARKERS SHALL BE DIRECT BY GBRA

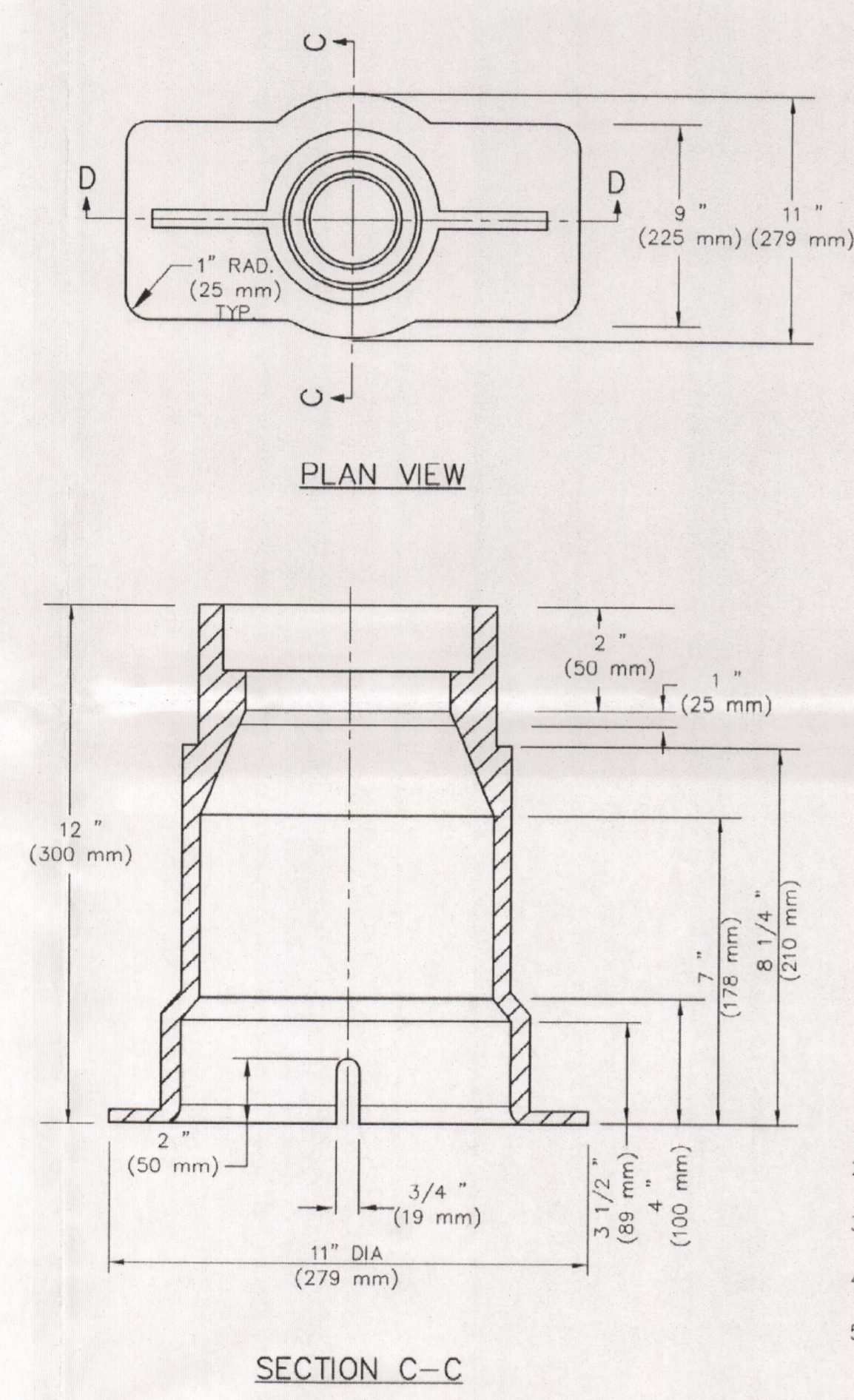
**PAVEMENT MARKERS (REFLECTORIZED)
TYPE I AND TYPE II
NOT TO SCALE**



NOTES:

- 1) WELD SOCKET 2 1/2" X 2" (64mm X 51mm) DEEP TO 1" (25 mm) (SCH. 40) ROUND STEM EXTENSION. FITTED ON OPERATING NUT, SCH. 80 FOR LENGTHS OVER 10' (3 m).
- 2) T.C.W.C. AND I.D. No. 17 STANDARD VALVE CASTING RING AND METAL LID IN UNPAVED AREAS.
- 3) NUT AT TOP OF VALVE EXTENSION ROD SHALL BE SQUARE 2" (51mm) LONG WELDED TO TOP OF ROD.
- 4) VALVE EXTENSIONS ARE REQUIRED ON ALL VALVES THAT EXCEED 3 FEET (0.9m) DEEP FROM FINISHED GRADE. VALVE EXTENSIONS SHALL BE PLACED SUCH THAT THE EXTENSION NUT IS BETWEEN 18 TO 24 INCHES (450 TO 600mm) FROM FINISHED GRADE.

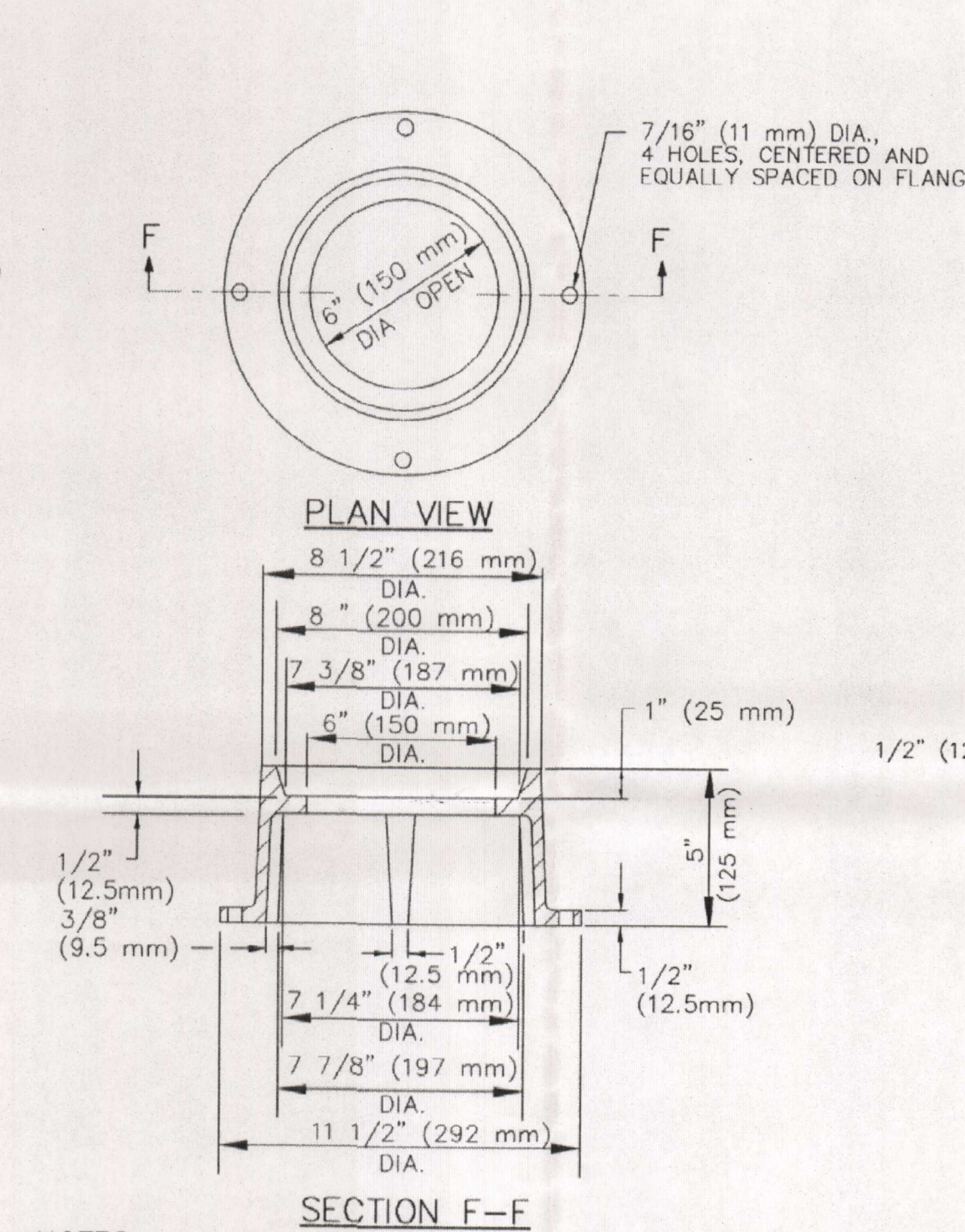
**VERTICAL GATE VALVE WITH BOX ASSEMBLY
NOT TO SCALE**



NOTES:

1. MATERIAL SHALL BE GREY CAST IRON, A.S.T.M. A48, GRADE 30B.
2. THE MANUFACTURER'S IDENTIFICATION AND CASTING NUMBER AND COUNTRY WHERE CAST, SHALL BE DISTINCTLY CAST ON TO EACH LID.
3. DRAFT AND SHRINKAGE ALLOWANCE SHALL BE IN ACCORDANCE WITH NORMAL FOUNDRY PRACTICE.
4. FINISH BY REMOVING FINIS AND FLASHING; PAINT WITH BLACK ASPHALT COATING.
5. WEIGHT: APPROXIMATELY 78 LBS.

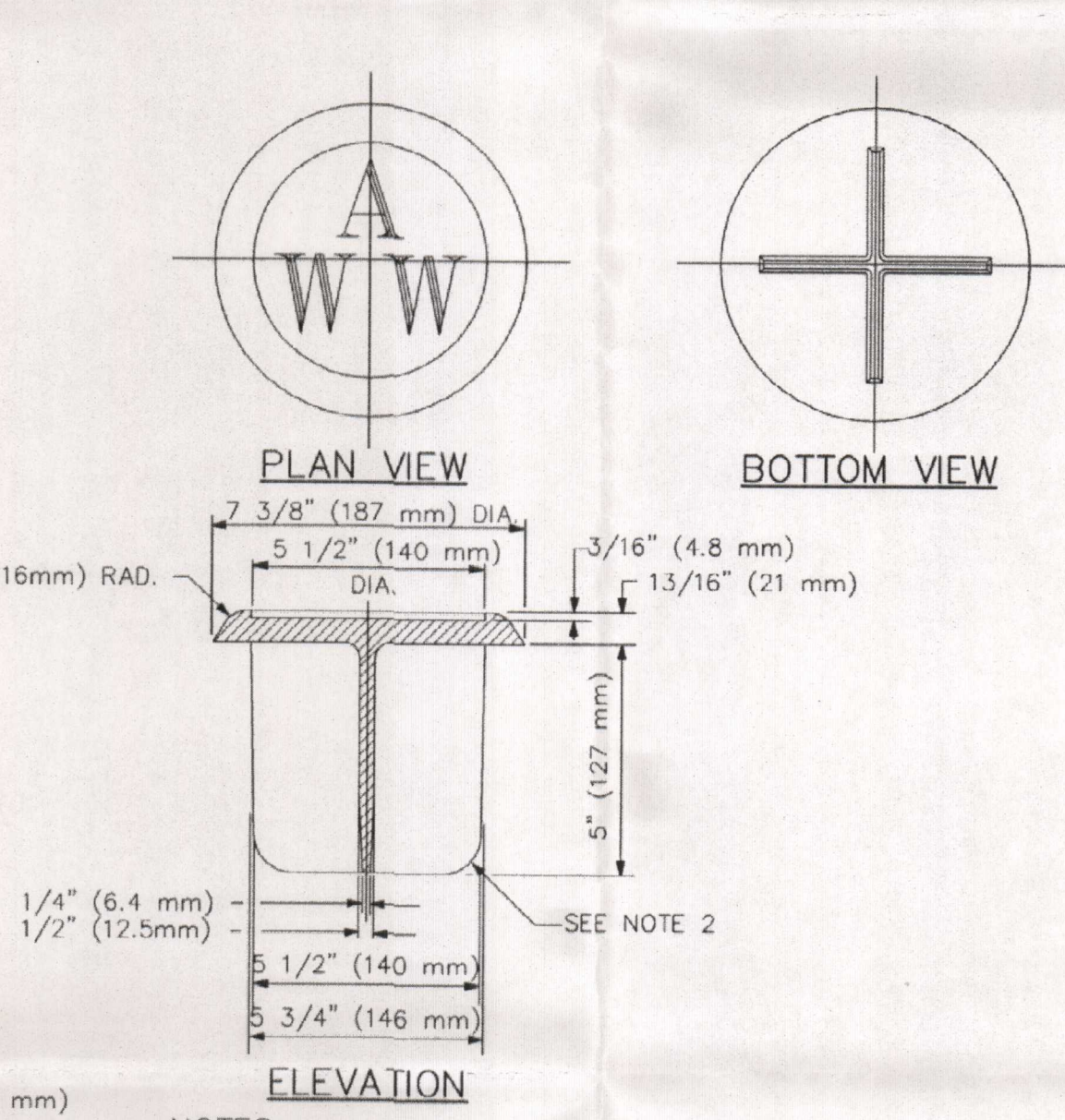
**TRAVIS COUNTY W.C. AND I.D. No. 17
VALVE BOX CASTING BOOT
NOT TO SCALE**



NOTES:

1. MATERIALS SHALL BE GRAY CAST IRON, ASTM A48, GRADE 30B.
2. THE MANUFACTURER'S IDENTIFICATION AND CASTING NUMBER AND THE COUNTRY WHERE CAST, SHALL BE DISTINCTLY CAST ON TO EACH RING.
3. DRAFT AND SHRINKAGE ALLOWANCE SHALL BE IN ACCORDANCE WITH NORMAL FOUNDRY PRACTICE.
4. FINISH BY REMOVING FINIS AND FLASHING; PAINT WITH BLACK ASPHALT COATING.
5. WEIGHT: APPROXIMATELY 23 LBS (10.5 KG).

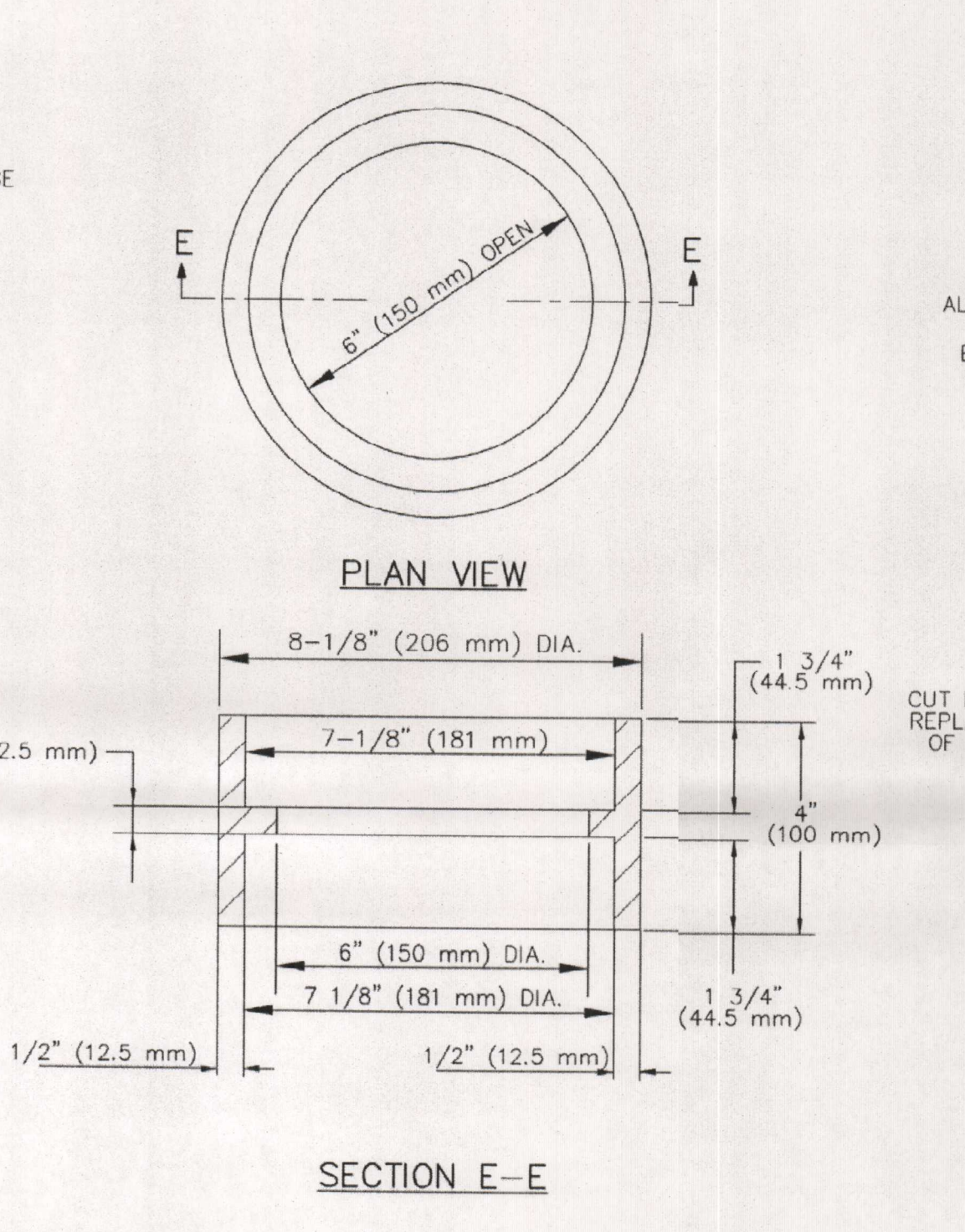
**VALVE BOX CASTING
PAVING RING
NOT TO SCALE**



NOTES:

1. MATERIAL SHALL BE GRAY CAST IRON, ASTM A48, GRADE 30B.
2. TYPICAL FILLET IS 3/16" (4.8mm) RADIUS
3. LETTERING SHALL BE 1 1/2" (38 mm) HEIGHT AND LOCATED AS SHOWN.
4. THIS LID FITS INSIDE 6" (150 mm) I.D. PIPE.
5. THE MANUFACTURER'S IDENTIFICATION, CASTING NUMBER, AND THE COUNTRY WHERE CAST, SHALL BE DISTINCTLY CAST ON TO EACH LID.
6. DRAFT AND SHRINKAGE ALLOWANCE SHALL BE IN ACCORDANCE WITH NORMAL FOUNDRY PRACTICE.
7. FINISH BY REMOVING FINIS AND FLASHING; PAINT WITH BLACK ASPHALT COATING.
8. WEIGHT: APPROXIMATELY 13 LBS. (6 KG).
9. ALL DIMENSIONS IN INCHES.

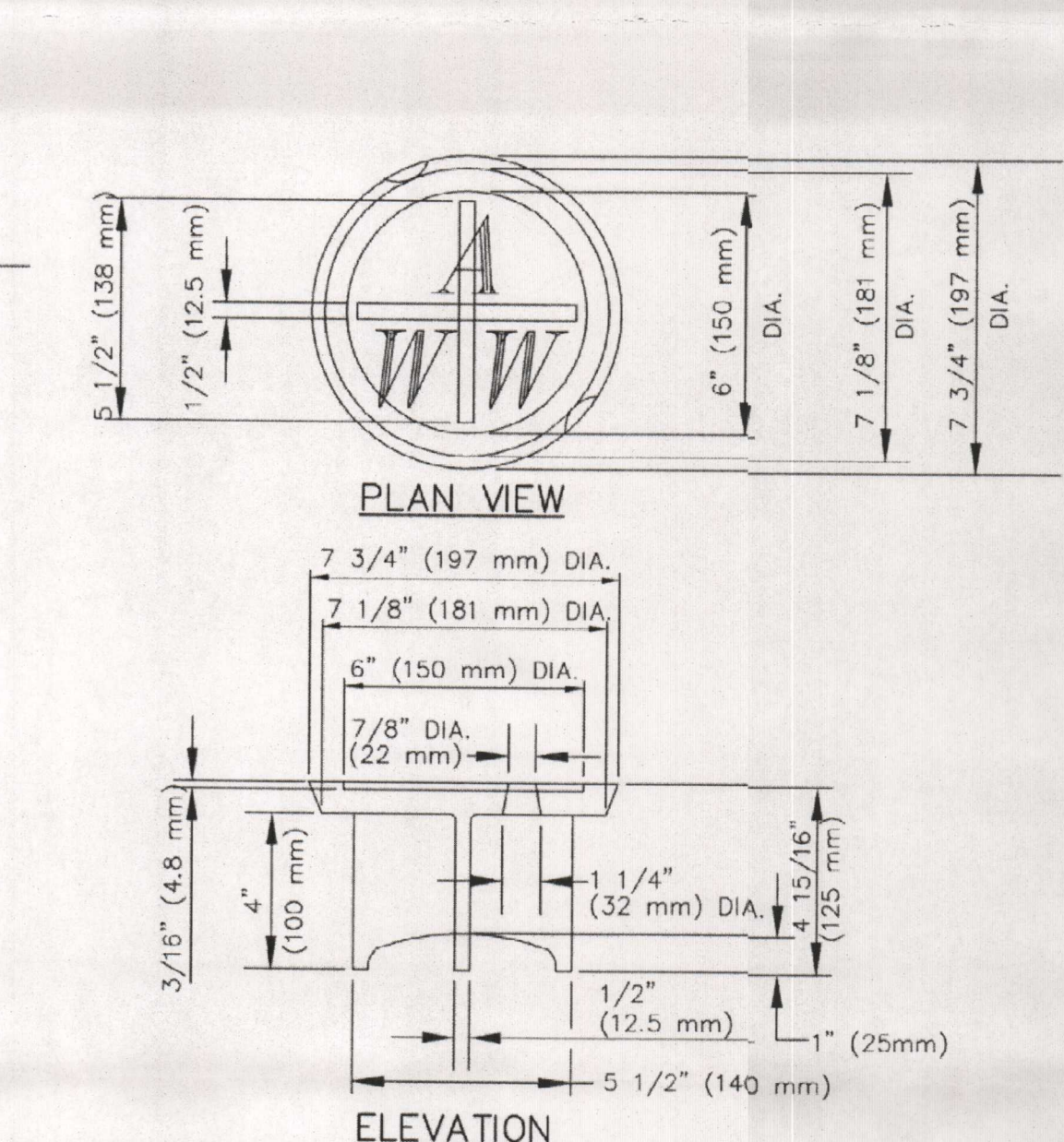
**VALVE BOX CASTING
LID (NOT IN PAVEMENT)
NOT TO SCALE**



NOTES:

1. MATERIALS SHALL BE GRAY CAST IRON, ASTM A48, GRADE 30B.
2. THE MANUFACTURER'S IDENTIFICATION AND CASTING NUMBER AND THE COUNTRY WHERE CAST, SHALL BE DISTINCTLY CAST ON TO EACH COLLAR.
3. DRAFT AND SHRINKAGE ALLOWANCE SHALL BE IN ACCORDANCE WITH NORMAL FOUNDRY PRACTICE.
4. FINISH BY REMOVING FINIS AND FLASHING; PAINT WITH BLACK ASPHALT COATING.
5. WEIGHT: APPROXIMATELY (17 lbs) 8 kg.

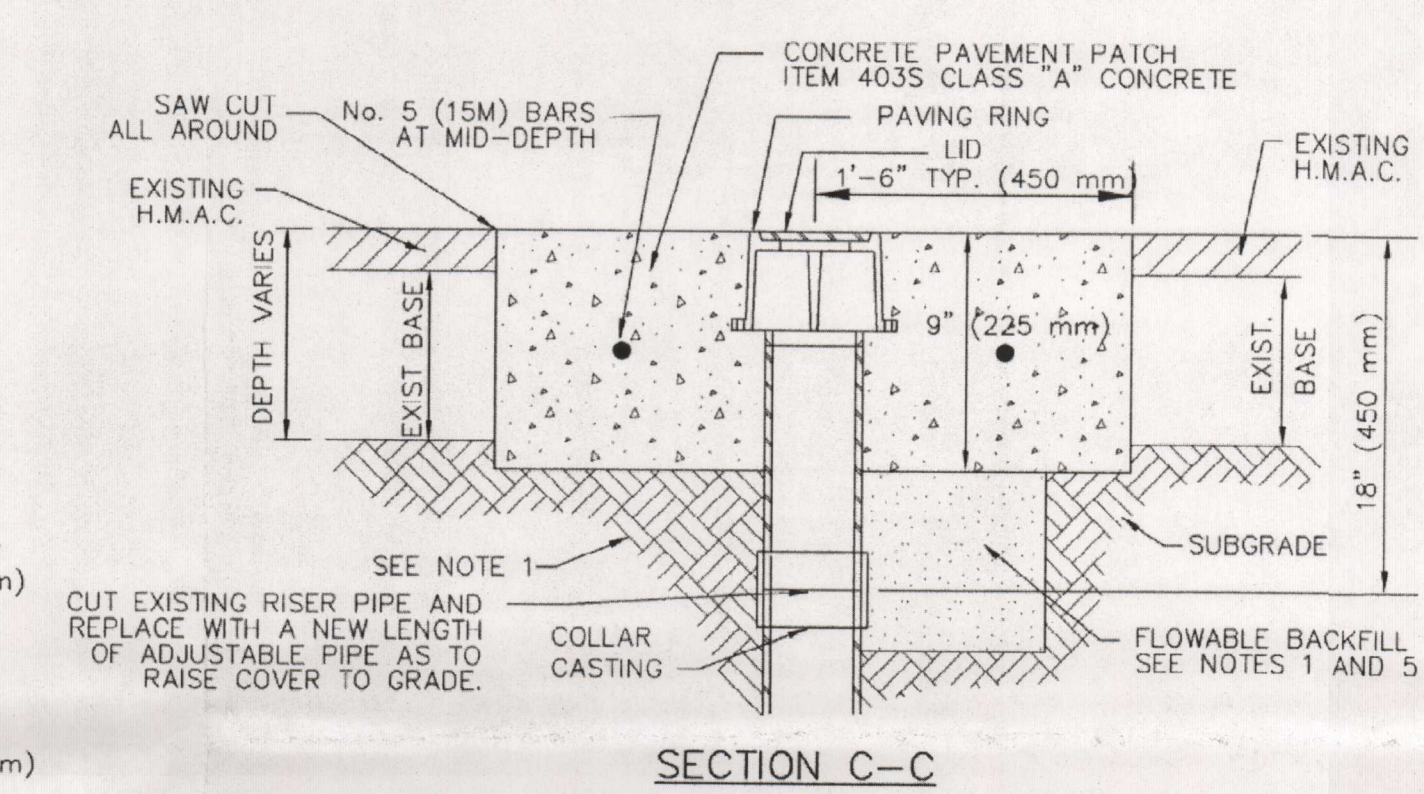
**VALVE BOX CASTING
COLLAR (NOT IN PAVEMENT)
NOT TO SCALE**



NOTES:

1. MATERIAL SHALL BE GRAY CAST IRON, ASTM A48, GRADE 30B.
2. TYPICAL FILLET IS 3/16" (4.8 mm) RADIUS
3. LETTERING SHALL BE 1 1/2" (38 mm) HEIGHT AND LOCATED AS SHOWN.
4. THIS LID REQUIRES TWO (2) PICK SLOTS.
5. THE MANUFACTURER'S IDENTIFICATION, CASTING NUMBER, AND THE COUNTRY WHERE CAST, SHALL BE DISTINCTLY CAST ON TO EACH LID.
6. DRAFT AND SHRINKAGE ALLOWANCE SHALL BE IN ACCORDANCE WITH NORMAL FOUNDRY PRACTICE.
7. FINISH BY REMOVING FINIS AND FLASHING; PAINT WITH BLACK ASPHALT COATING.
8. WEIGHT: APPROXIMATELY 13 LBS. (6 KG).

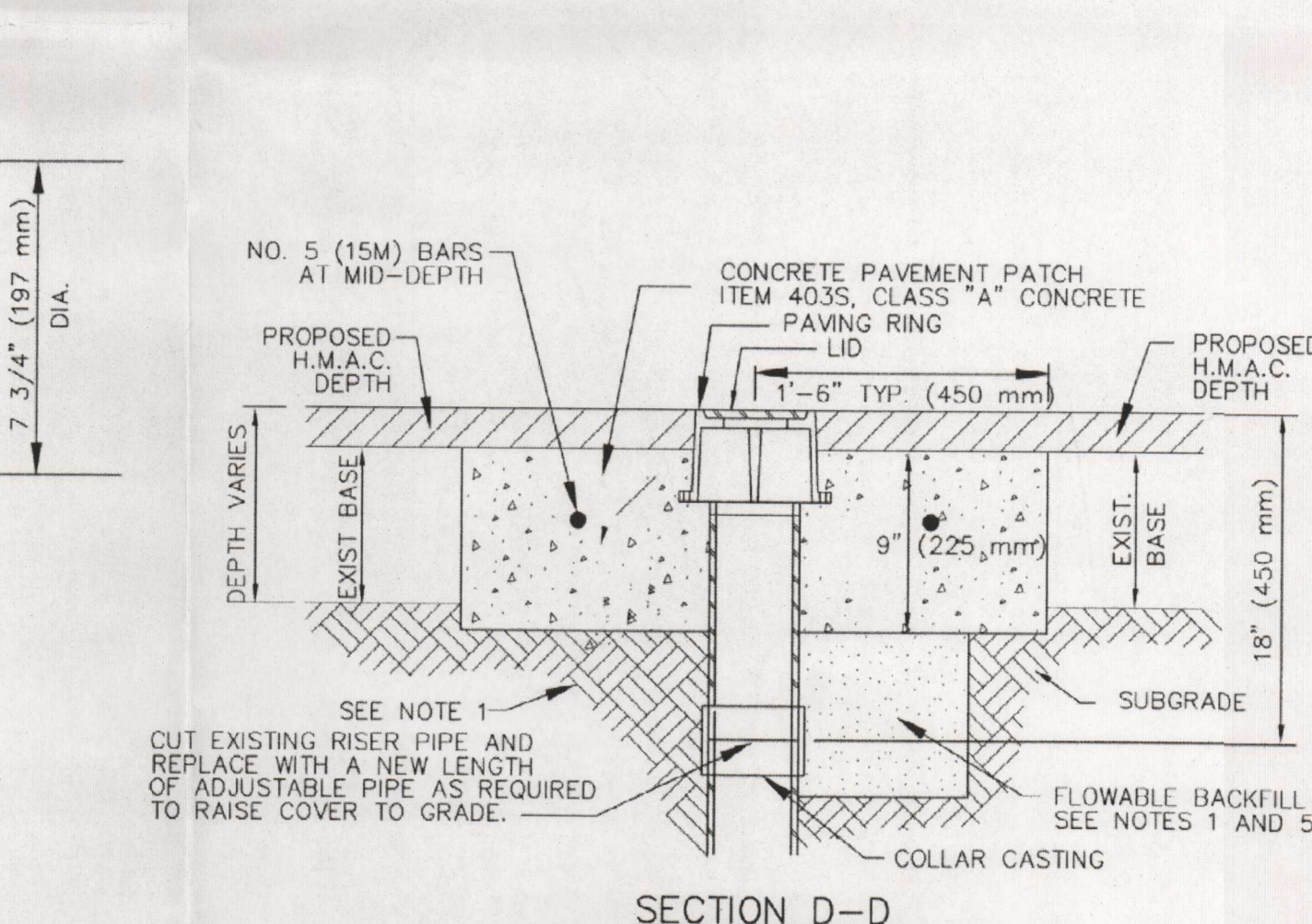
**VALVE BOX CASTING
LID IN PAVEMENT
NOT TO SCALE**



NOTES:

1. SUBGRADE SHALL BE COMPACTED AS PER DETAIL, SUBGRADE PREPARATION.
2. VALVE CASTINGS SHALL BE ADJUSTED TO GRADE AFTER FINAL LIFT OF OVERLAY IS IN PLACE.
3. CLEAN VALVE BOX OF ALL DEBRIS DOWN TO THE BASE OF THE VALVE.
4. REMOVE EXISTING RISER PIPE DOWN 18" (457 mm) AND REPLACE TO THE NEW ELEVATION USING NEW ADJUSTABLE PIPE AND A CASTING.
5. WHERE CAST IRON CASTINGS TO BE REMOVED REQUIRE EXCAVATION GREATER THAN 20" (500 mm) DEEP. CONTRACTOR MAY ELECT TO FILL EXCAVATION WITH CONTROLLED LOW STRENGTH MATERIAL TO THE UNDERSIDE OF THE CONCRETE PAVEMENT PATCH IN LIEU OF COMPACTED BACKFILL.
6. REINFORCING STEEL SHALL MEET SPECIFICATIONS FOR REINFORCING STEEL.

**VALVE BOX ADJUSTMENT TO GRADE
WITH FULL DEPTH CONCRETE
NOT TO SCALE**

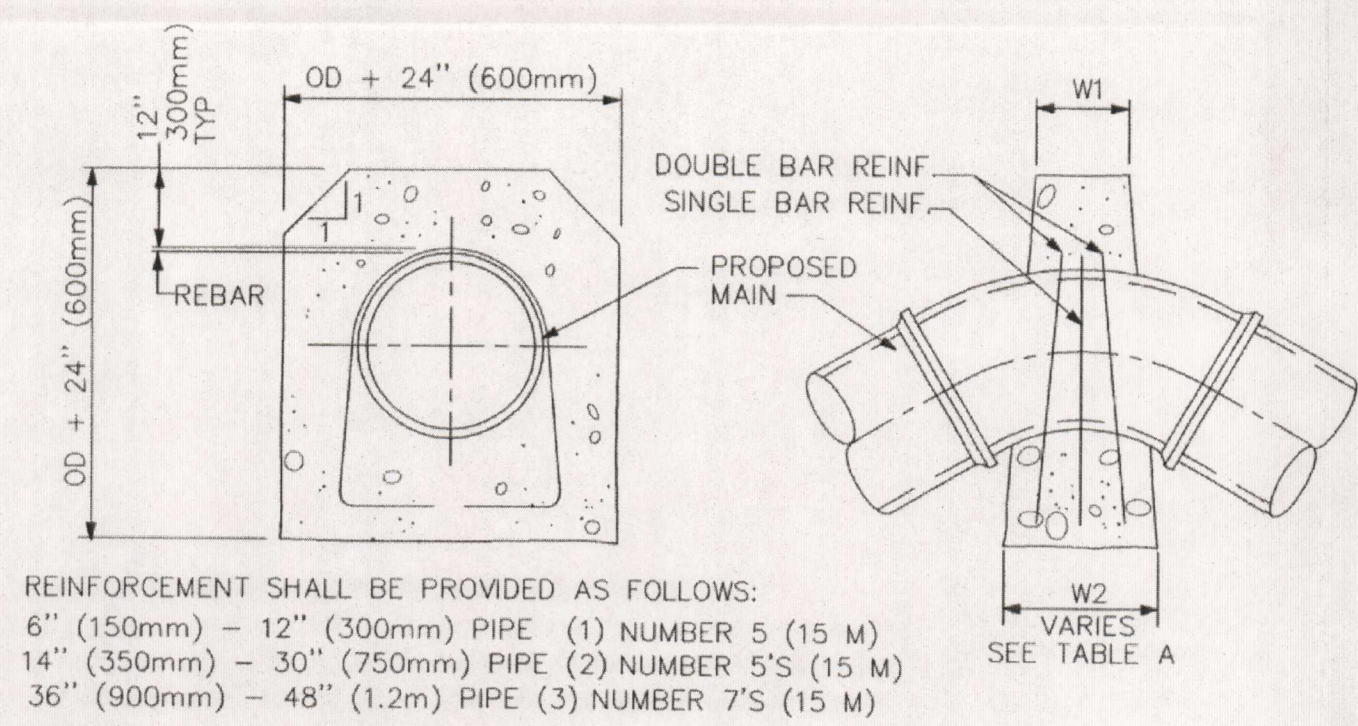


NOTES:

1. SUBGRADE SHALL BE COMPACTED AS PER DETAIL, SUBGRADE PREPARATION.
2. VALVE CASTINGS SHALL BE ADJUSTED TO GRADE AFTER FINAL LIFT OF OVERLAY IS IN PLACE.
3. CLEAN VALVE BOX OF ALL DEBRIS DOWN TO THE BASE OF THE VALVE.
4. REMOVE EXISTING RISER PIPE AND REPLACE WITH A NEW LENGTH OF ADJUSTABLE PIPE AS REQUIRED TO RAISE COVER TO GRADE.
5. WHERE CAST IRON CASTINGS TO BE REMOVED REQUIRE EXCAVATION GREATER THAN 20" (500 mm) DEEP. CONTRACTOR MAY ELECT TO FILL EXCAVATION WITH CONTROLLED LOW STRENGTH MATERIAL TO THE UNDERSIDE OF THE CONCRETE PAVEMENT PATCH IN LIEU OF COMPACTED BACKFILL.
6. REINFORCING STEEL SHALL MEET SPECIFICATIONS FOR REINFORCING STEEL.

**VALVE BOX ADJUSTMENT
TO GRADE WITH CONCRETE AND H.M.A.C.
NOT TO SCALE**

REVIEWED 10/20/08 SAH ANTONIO REGION		2008 JUL 22 AM 11:20 NO.	BY DATE
DESIGNED BY: C.E.K. DRAWN BY: S.L. CHECKED BY: J.B. APPROVED BY: C.E.K. DATE: March 2008	JOHNSON RANCH PHASE 1 WASTEWATER DETAILS COMAL COUNTY WATER CONTROL AND IMPROVEMENT DISTRICT No. 1		
ENGINEERING, LAND SURVEYING & ENVIRONMENTAL CONSULTING 3101 Bee Cave Road • Suite 100 • Austin, Texas 78746 Phone: (512) 327-1130 • Fax: (512) 327-4062 • www.lloomis.com			
LOOMIS AUSTIN			
SHEET NO. 14 OF 17			



REINFORCEMENT SHALL BE PROVIDED AS FOLLOWS:
 6" (150mm) - 12" (300mm) PIPE (1) NUMBER 5 (15 M)
 14" (350mm) - 30" (750mm) PIPE (2) NUMBER 5'S (15 M)
 36" (900mm) - 48" (1.2m) PIPE (3) NUMBER 7'S (15 M)

VERTICAL DOWN BEND

TABLE A UPWARD THRUST GRAVITY BLOCKS			
PIPE DIA.	MIN. TOP WIDTH W1	ANGLE (degrees)	BOTTOM WIDTH W2 (in)
6" (150mm)	6" (150mm)	0-5	NOTE 2
		5-15	24 (300 MM)
		15-25	48 (1220 MM)
8" (200mm)	6" (150mm)	0-5	NOTE 1
		5-9	30 (760 MM)
		9-15	36 (900 MM)
12" (300mm)	6" (150mm)	0-5	NOTE 1
		5-15	48 (1220 MM)
		15-25	96 (2440 MM)
16" (400mm)	12" (300mm)	0-5	NOTE 2
		5-10	60 (150 MM)
		10-15	96 (2440 MM)

NOTES:
 1- FOR ANGLES GREATER THAN THOSE INDICATED RESTRAINT JOINTS SHALL BE INSTALLED.
 2- FOR JOINT DEFLECTIONS LESS THAN 5 DEGREES, NO HORIZONTAL OR VERTICAL THRUST RESTRAINT IS REQUIRED FOR PIPES LESS THAN 42" (1060 MM) IN DIAMETER.

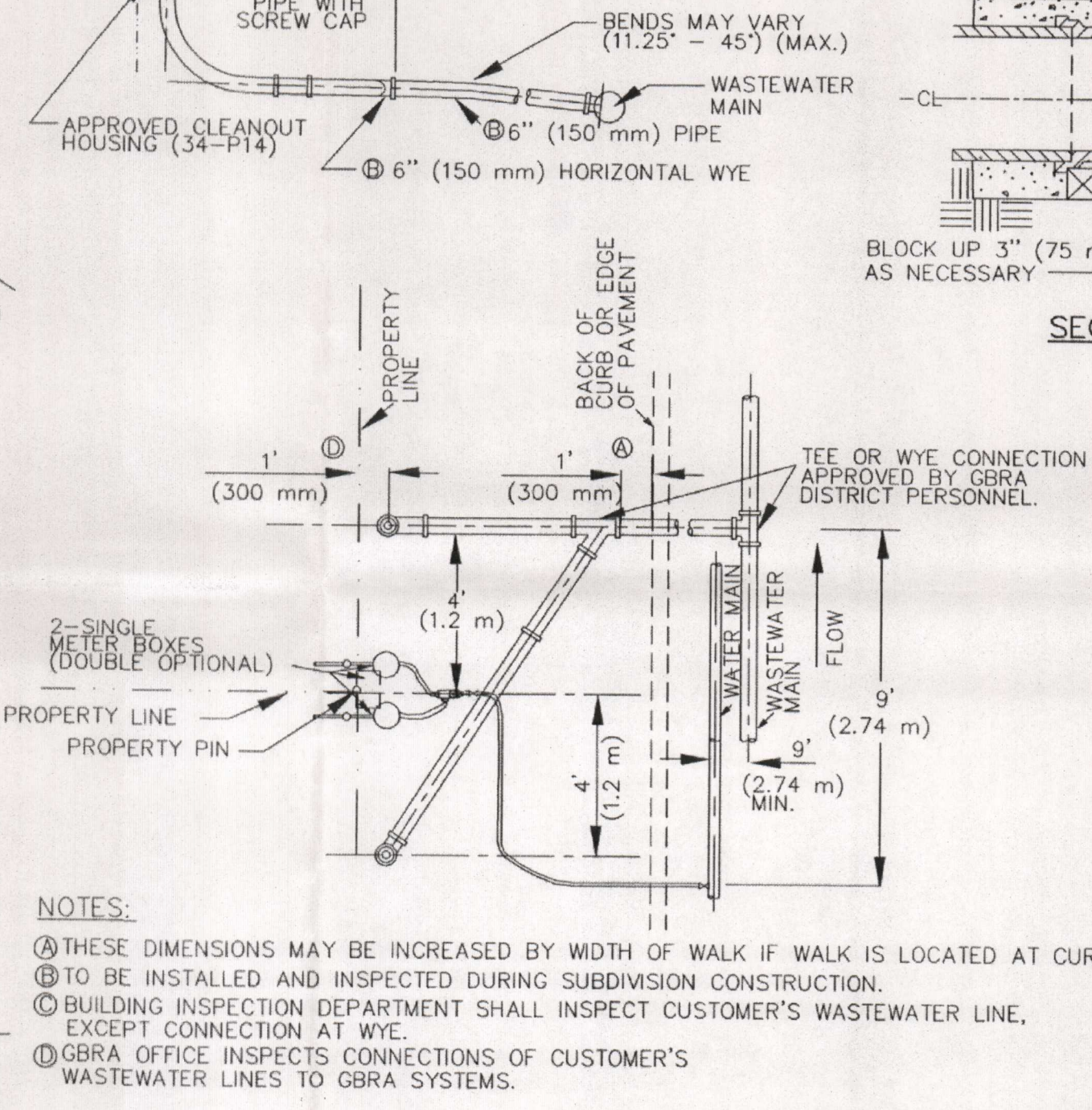
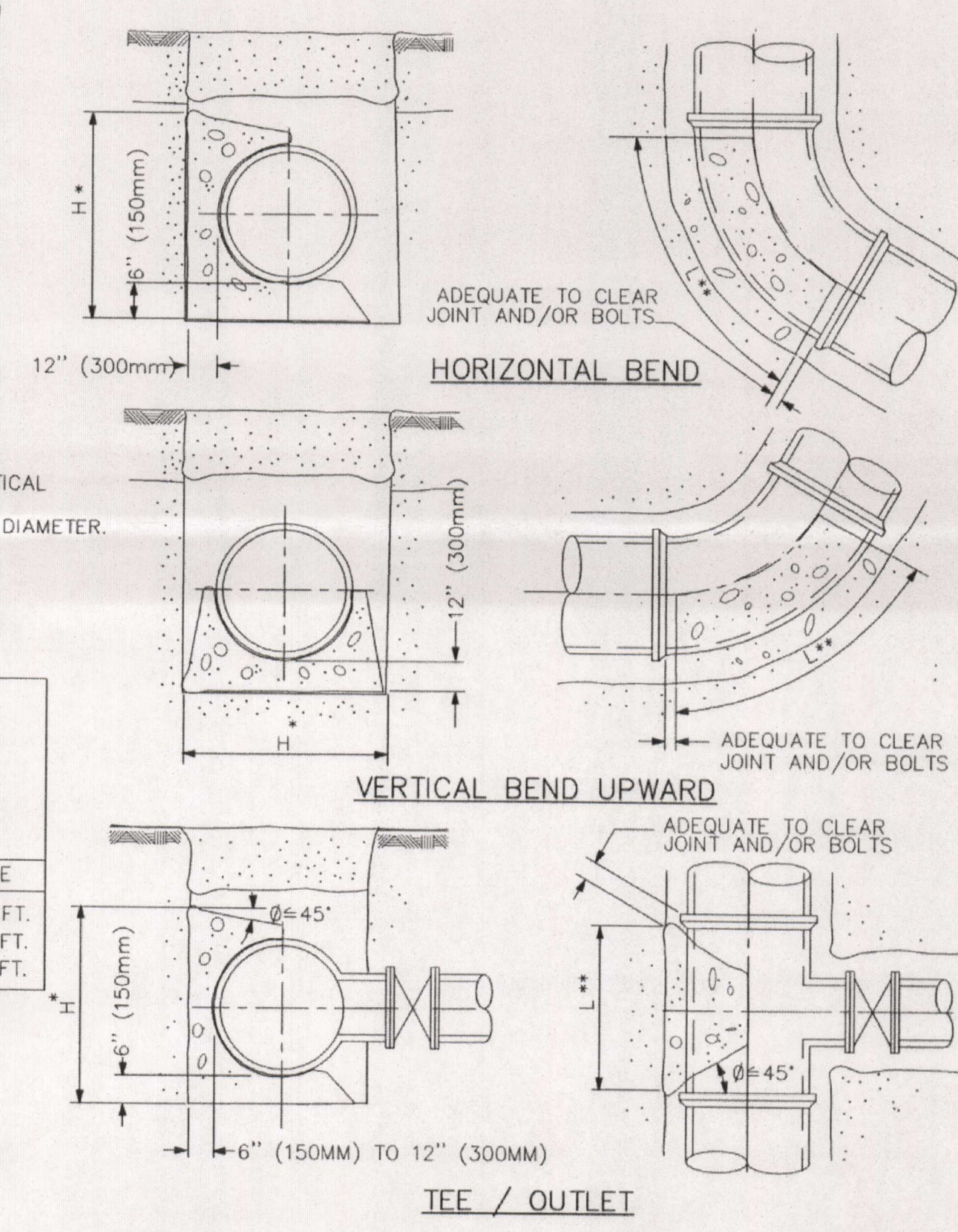
THRUST BLOCK DESIGN AS FOLLOWS
 A. PRESSURE OF 150 P.S.I. (ACTUAL IF HIGHER)
 + 50 % SURGE ALLOWANCE
 B. MAXIMUM SOIL BEARING SEE TABLE BELOW

SOIL TYPES	PRESSURE
LOOSE OR SPONGY SOIL	1500 Lb./SQ.FT.
UNDISTURBED SOIL, CALICHE	2000 Lb./SQ.FT.
LIMESTONE ROCK	4000 Lb./SQ.FT.

NOTES:
 1. THE EARTH BEARING SURFACE SHALL BE UNDISTURBED MATERIAL, IF NOT POSSIBLE, THE FILL BETWEEN THE BEARING SURFACE AND THE UNDISTURBED SOIL MUST BE COMPACTED TO A MINIMUM OF 90% STANDARD PROCTOR DENSITY.
 2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSTALL ADEQUATE THRUST BLOCKING. THE CONTRACTOR SHALL MAKE THE DETERMINATION IN THE FIELD AS TO TYPE OF SOIL AND USE THE "THRUST BLOCKING DESIGN" TO ADJUST THE AMOUNTS OF THRUST BLOCKING REQUIRED AT EACH PLACE OF USE.
 3. ALL FITTINGS SHALL BE BLOCKED REGARDLESS OF THE ANGLE OF DIRECTION.

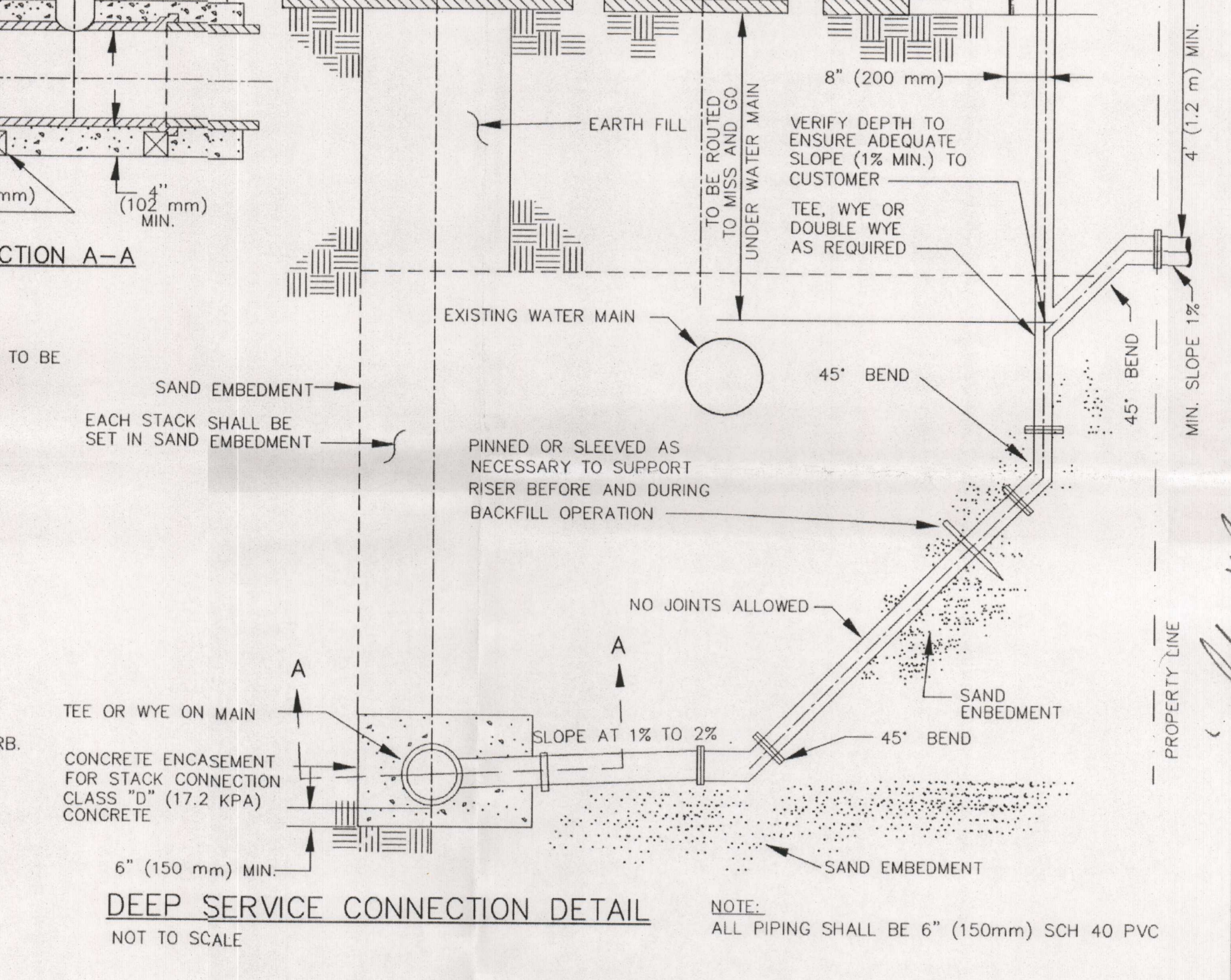
CONCRETE THRUST BLOCKING

NOT TO SCALE



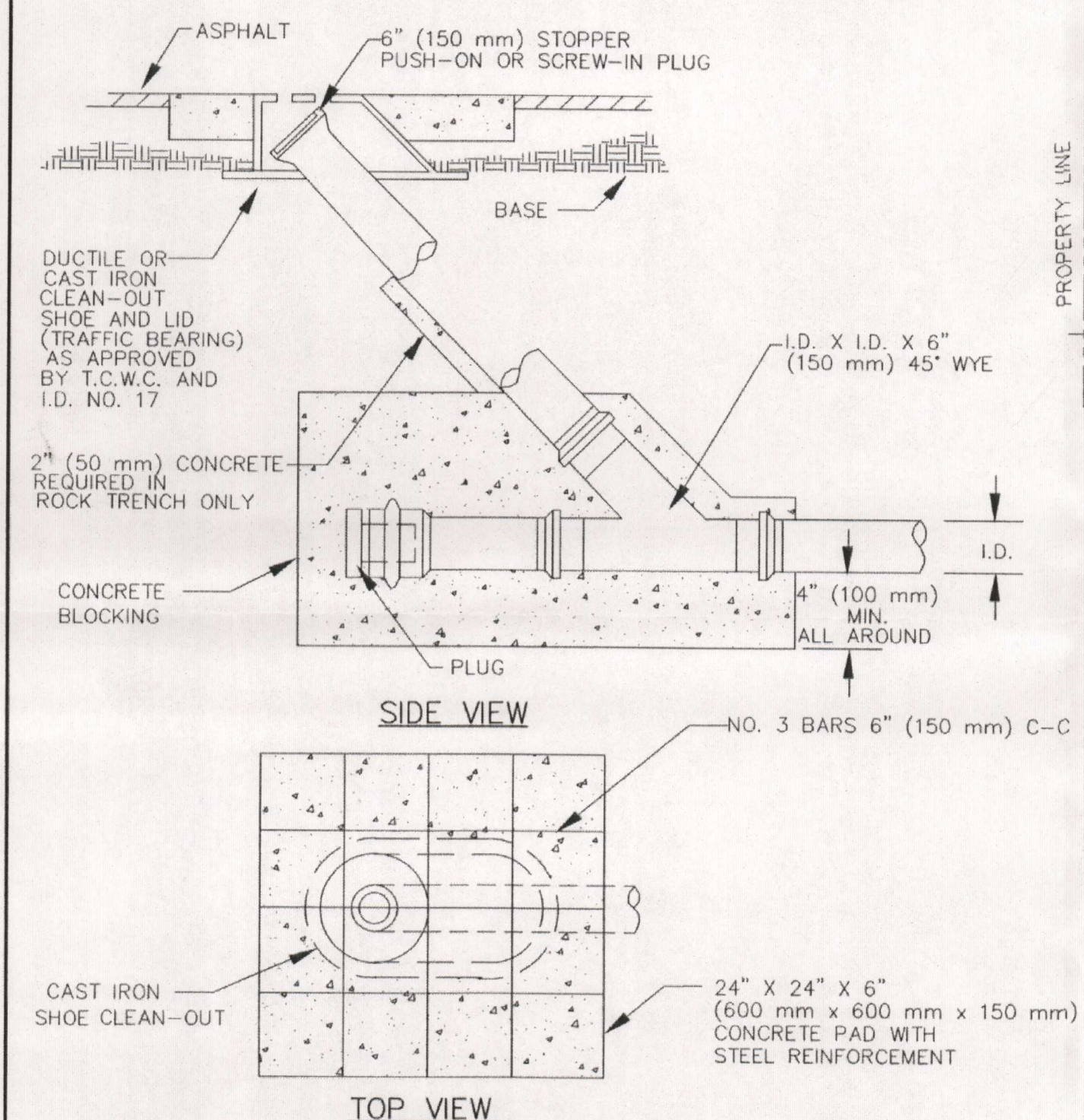
WATER AND WASTEWATER SERVICE CONNECTION DETAIL

NOT TO SCALE



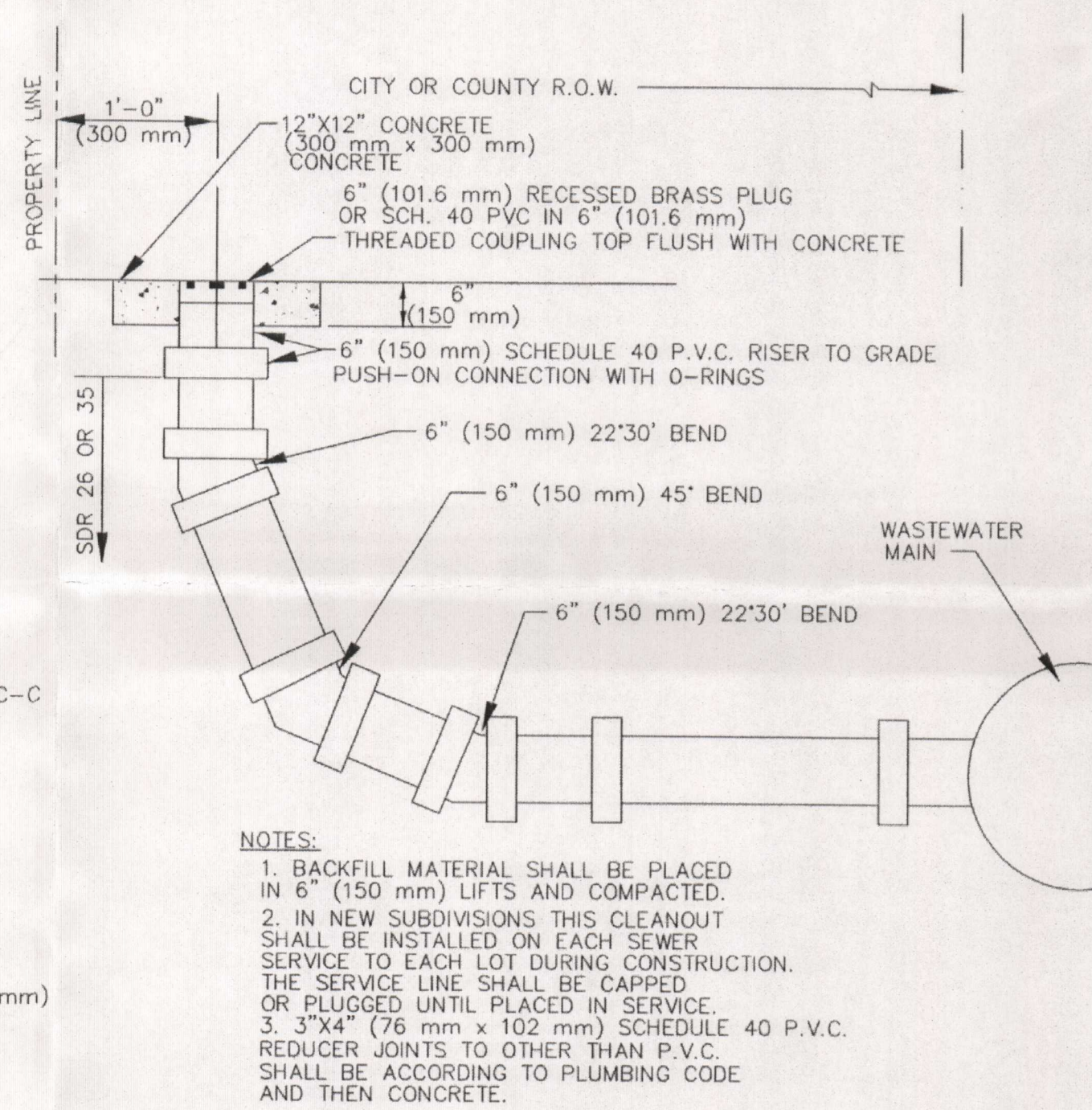
DEEP SERVICE CONNECTION DETAIL

NOT TO SCALE



MAIN LINE CLEAN-OUT FOR WASTEWATER WITHIN PAVEMENT

NOT TO SCALE

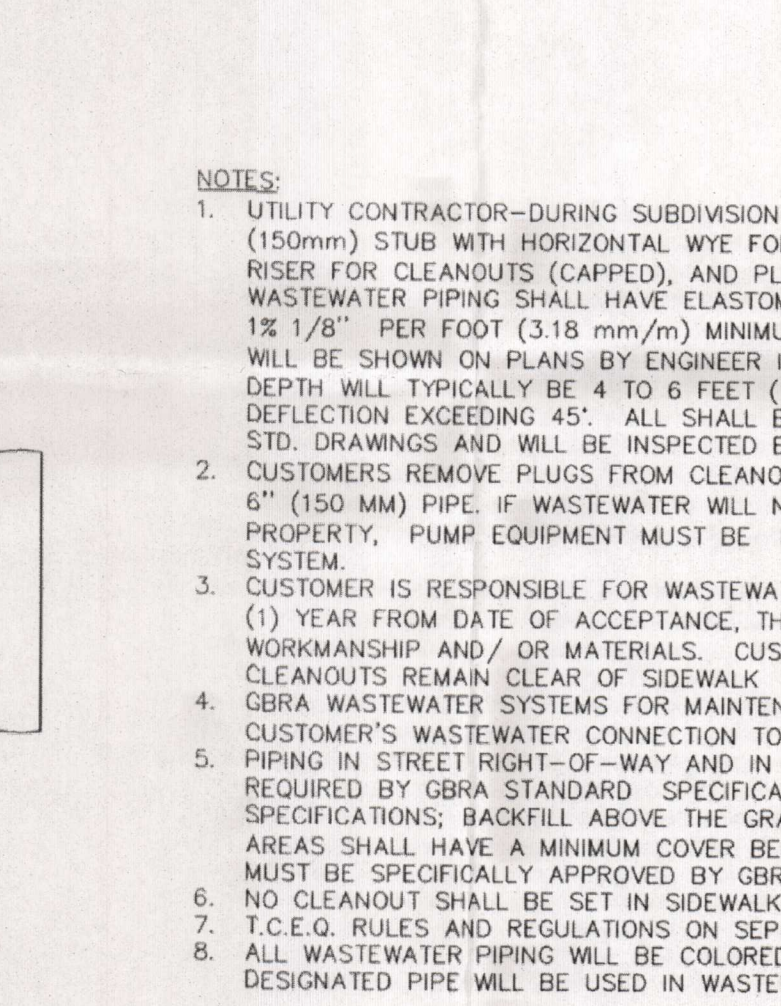


RESIDENTIAL AND COMMERCIAL CLEANOUT

NOT TO SCALE

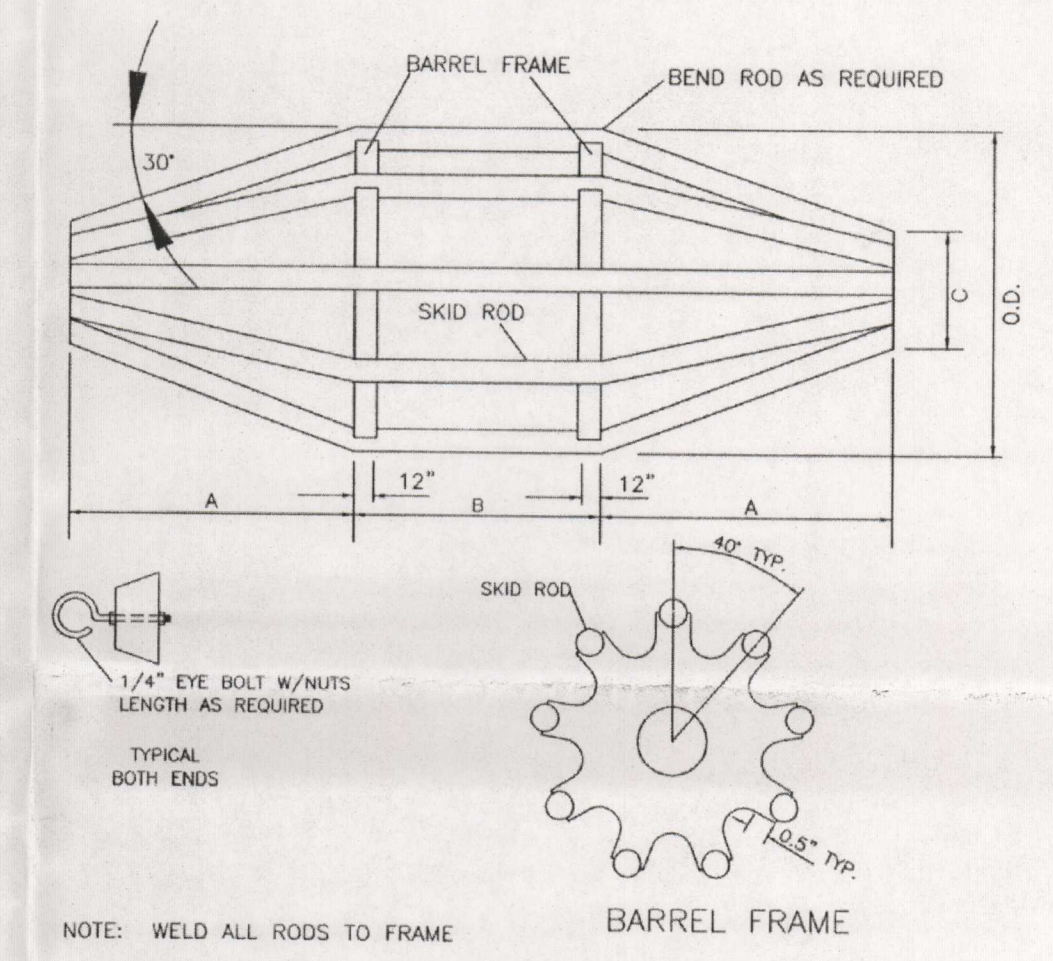
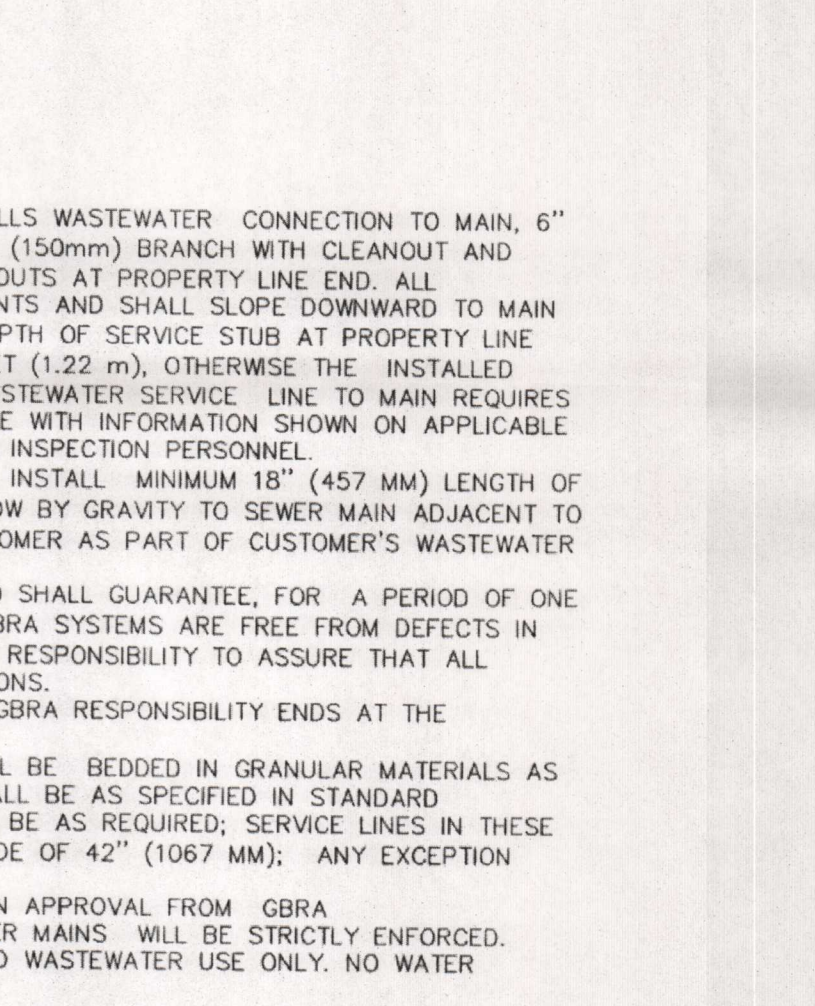
WASTEWATER SERVICE MULTIPLE CONNECTION BENCH CONFIGURATION

NOT TO SCALE



SERVICE WITH VERTICAL CURVE CONNECTION

NOT TO SCALE



NOTE: WELD ALL RODS TO FRAME
 MANDREL SHALL BE CONSTRUCTED FROM METAL OF RIGID PLASTIC MATERIAL THAT CAN WITHSTAND 200 PSI WITHOUT BEING DEFORMED.
 MANDREL DIMENSIONS
 5% DEFLECTION
 FOR O.D. CONTROLLED PVC PIPE
 (ALL DIMENSIONS IN INCHES)

PIPE SIZE (in)	A (in)	B (in)	C (in)	MANDREL O.D. (in)
8	5.3	6.0	1.40	7.33
12	8.0	8.0	1.95	10.91
15	10.0	9.0	2.15	13.35
18	12.0	12.0	2.89	16.69

TYPICAL MANDREL DETAILS

NOT TO SCALE

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DESIGNED BY: C.E.K.
 DRAWN BY: S.T.
 CHECKED BY: J.E.
 APPROVED BY: C.E.K.
 DATE: March 2008

NO.

JOHNSON RANCH
 PHASE 1
 WASTEWATER DETAILS
 COMAL COUNTY WATER CONTROL AND
 IMPROVEMENT DISTRICT No. 1

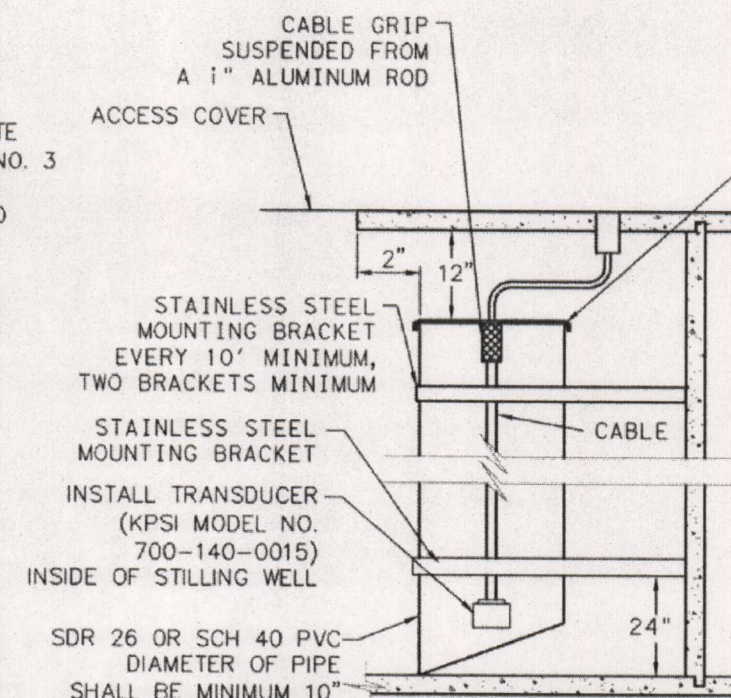
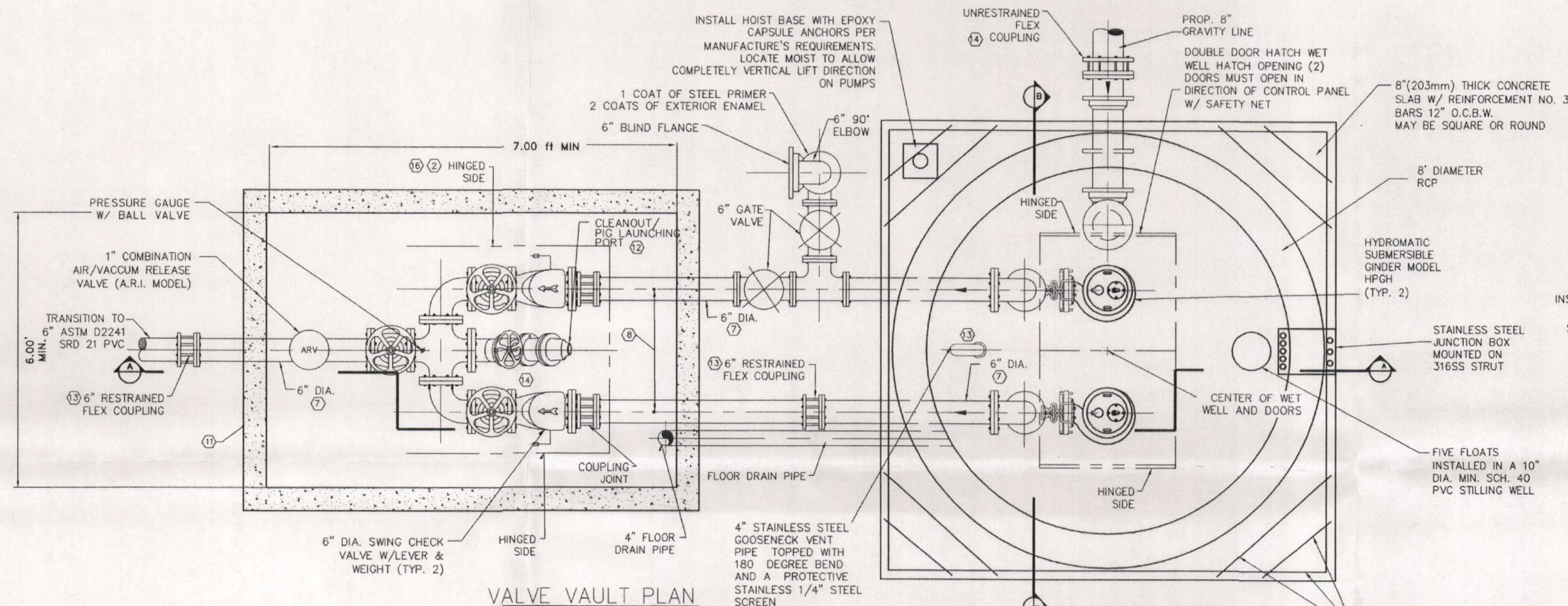
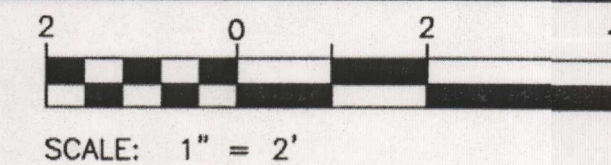
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CHARLES W. KOUGH
 90181
 LICENSED PROFESSIONAL ENGINEER
 STATE OF TEXAS

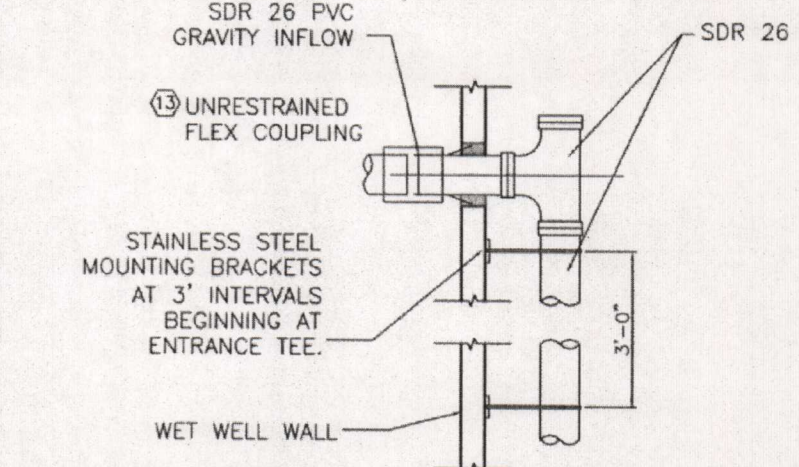
SHEET NO.

15

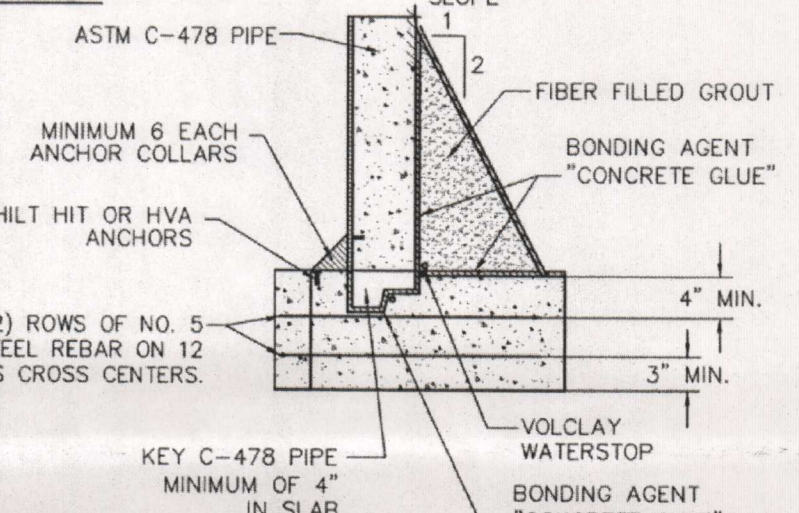
OF 17



PRESSURE TRANSDUCER
INSTALLATION DETAIL
SCALE: N.T.S.



GRAVITY INLET - DETAIL
SCALE: N.T.S.

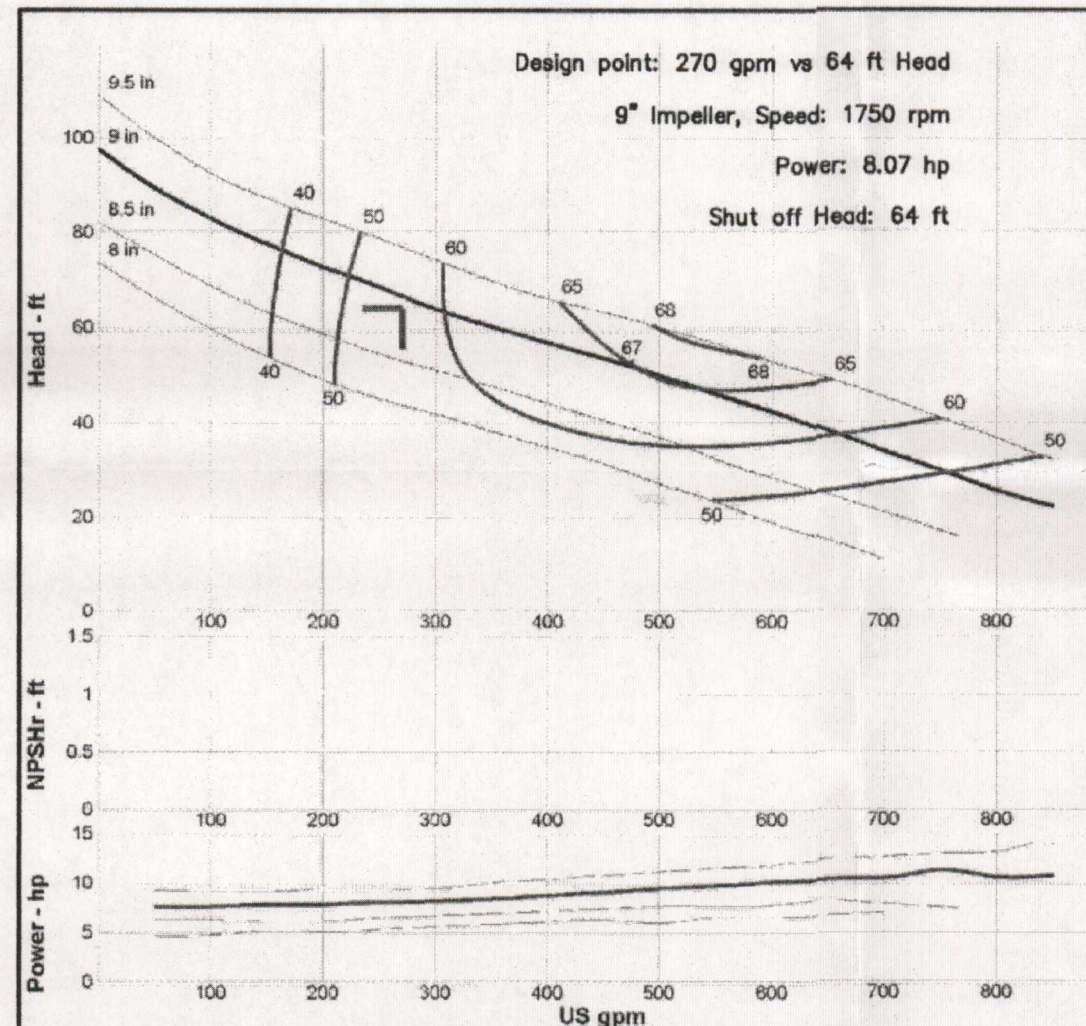
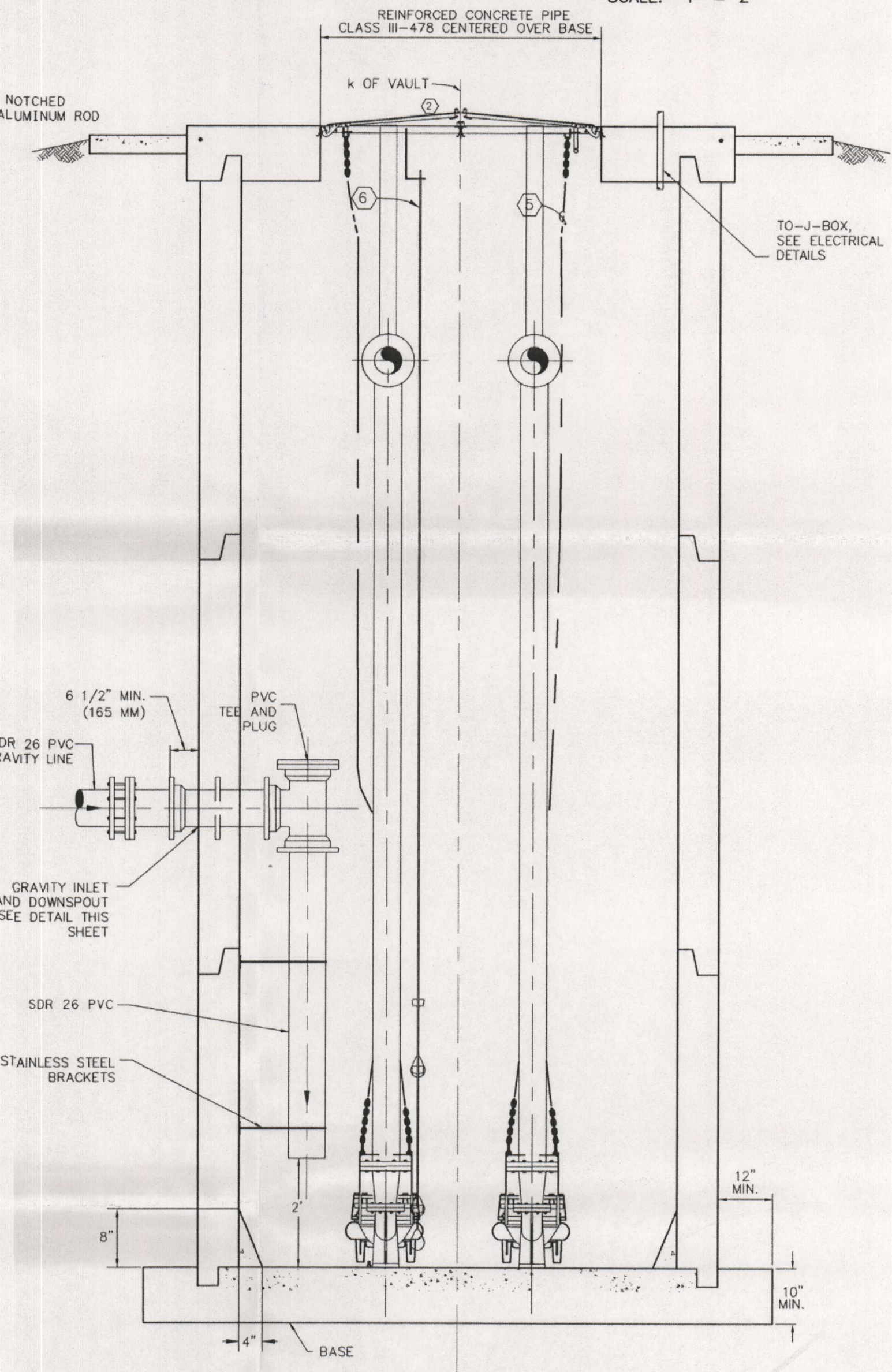


WET WELL ANCHOR
AND SEAL DETAIL
SCALE: N.T.S.

KEYNOTES:

- WET WELL AND VALVE VAULT SHALL BE WRAPPED WITH 6" MANHOLE JOINT WRAP ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS FOR USE IN WET WELLS. WET WELL SHALL BE COATED INSIDE WITH "LAFARGE" SEWER COAT OR EQUAL WITH MINIMUM THICKNESS AS RECOMMENDED BY MANUFACTURER.
- THE ACCESS COVERS SHALL BE A MINIMUM OF (2) 36 INCH BY 36 INCH. PUMP SUPPLIER SHALL PROVIDE DIMENSIONS OF ACCESS OVER THE WET WELL TO ENSURE COMPATIBILITY WITH SUPPLIED EQUIPMENT. THE ACCESS FRAME AND COVER TO THE VAULT SHALL BE CONSTRUCTED OF ALUMINUM THREAD PLATE AND SHALL BE WATERTIGHT (GASKET). THE DOORS SHALL OPEN TO 90° AND AUTOMATICALLY LOCK. THE LIFTING HANDLES, HANDLES, HINGES AND ALL FASTENING HARDWARE SHALL BE ALUMINUM OR STAINLESS STEEL, TYPE 316. ACCESS COVER ON VALVE VAULT SHALL BE CENTERED ON THE VALVES AND CLEANOUT FOR ACCESS.
- PUMP SUPPLIER SHALL PROVIDE DIMENSIONS OF THE STAINLESS STEEL GUIDE RAILS TO ENSURE COMPATIBILITY WITH SUPPLIED EQUIPMENT. THE PUMP SHALL BE EASILY REMOVED FOR INSPECTION OR SERVICE. PERSONNEL SHALL HAVE NO REASON TO ENTER THE WET WELL. GUIDE RAILS SHALL BE SUPPORTED EVERY 10 FEET WITH STAINLESS STEEL SUPPORTS.
- ALL HARDWARE AND FASTENERS USED SHALL BE CONSTRUCTED OF 316 SERIES STAINLESS STEEL. GUIDE BRACKETS FOR EACH PUMP MUST BE SUPPLIED BY THE PUMP MANUFACTURER TO ENSURE COMPATIBILITY WITH SUPPLIED EQUIPMENT.
- EACH PUMPING UNIT SHALL BE PROVIDED WITH A 316 STAINLESS STEEL LIFTING CHAIN. LIFTING CHAIN SHALL EXTEND AT LEAST 3-4 FEET ABOVE WET WELL.
- A 316 STAINLESS STEEL FLOAT MOUNTING ASSEMBLY SHALL BE PROVIDED. THE FLOATS SHALL BE MOUNTED AWAY FROM THE WET WELL INLET, ANY CONTROL WIRING, AND THE PUMPS TO MINIMIZE DISTURBANCE.
- ALL STATIONARY PRESSURE PIPING USED IN THE LIFT STATION OR VALVE VAULT SHALL BE DUCTILE IRON OR 300 SERIES STAINLESS STEEL. DUCTILE IRON MUST BE LINED AND COATED ACCORDING TO CITY OF AUSTIN STANDARD PRODUCTS LIST NO. WW-534. ALL HARDWARE MUST BE 316 SERIES STAINLESS STEEL.
- PUMP DISCHARGE LINES SHALL HAVE 1/4 INCH TAPS WITH STAINLESS STEEL OR BRONZE BALL VALVES. THE TAPS SHALL BE ACCESSIBLE AND LOCATED UPSTREAM OF THE VALVES (ON THE PUMP SIDE) IN THE EXTERNAL VAULT VALVE. IN THE VAULT ALL DISCHARGE LINES SHALL HAVE ADEQUATE THRUST SUPPORT MEMBERS AT EACH FITTING. WHERE POSSIBLE, LONG RADIUS 90 DEGREE BENDS SHALL BE USED.
- THE DISCHARGE LINE FROM EACH PUMP SHALL BE FITTED WITH A CHECK VALVE AND A RESILIENT WEDGE GATE VALVE, WITH THE CHECK VALVE ON THE PUMP SIDE OF THE GATE VALVE. WHEN NECESSARY, AIR RELEASE VALVE(S) SHALL BE INSTALLED DOWNSTREAM OF THE GATE VALVES.
- THE VALVE VAULT SHALL BE SIZED LARGE ENOUGH TO PROVIDE AT LEAST 1 FOOT OF CLEARANCE AROUND ALL VALVES AND 6 INCHES OF CLEARANCE TO ALL FLANGES. THE COVERS SHALL BE ABLE TO BE SECURED BY A PADLOCK USING A HEAVY DUTY HASP. THE VAULT SHALL BE COATED WITH THE SAME COATINGS AS THE WET WELL. ALL PIPING SHALL BE COATED WITH COAL TAR EPOXY.
- THE VALVE VAULT SHALL HAVE A DRAIN TO THE WET WELL. THE DRAIN SHALL HAVE A 4 INCH MINIMUM DIAMETER AND BE FITTED WITH A FLAP VALVE AND A BACK-FLOW PREVENTER AND A TRAP TO PREVENT GASES OR WATER FROM ENTERING THE VALVE VAULT. THE OPENING TO THE DRAIN SHALL BE COVERED WITH A STAINLESS STEEL SCREEN. ALL PIPING AND VALVES TO BE CONNECTED WITH COAL TAR EPOXY.
- VENT SHALL BE STAINLESS STEEL WITH 180 DEGREE BEND AND A PROTECTIVE STAINLESS STEEL SCREEN. HEIGHT OF SCREEN FROM TOP OF CONCRETE SHALL BE 2 FT.
- *RESTRAINED FLEX COUPLINGS: MJD DI SPOOL WITH UNIFLANGE 1400 RESTRAINTS
*UNRESTRAINED FLEX COUPLINGS: SMITH BLAIR TYPE 411.
- LEVER ARMS ON CHECK VALVES MUST BE PLACED OPPOSITE TO PIG PORT.
- CONTRACTOR SHALL ADJUST LOCATION OF VALVE VAULT HATCH AS NECESSARY TO PROVIDE UNOBSTRUCTED ACCESS TO PIG LAUNCHING PORT.

SECTION B



HYDRAMATIC
SUBMERSIBLE GRINDER PUMP
SIZE H4H/H4HX-1000
TYPE NCLOG6-4
SCALE: N.T.S.

A FT.	B FT.	C FT.	D FT.	E FT.	F FT.	IMPELLER DIAMETER
2.0	2.5	3.0	5.0	6.0	7.0	9"
2.0	2.5	3.0	5.0	6.0	7.0	9"

NOTES:
THESE LEVELS ARE BASED ON DESIGN ASSUMPTIONS WHICH MAY NOT EXIST IN THE FIELD. OPERATOR SHALL FIELD ADJUST AS NEEDED TO MINIMIZE WASTEWATER DETENTION TIMES WHILE ENSURING NO MORE THAN 4 PUMP STARTS PER HOUR PER PUMP.

JOHNSON RANCH
PHASE 1

LIFT STATION PLAN, SECTION
AND DETAILS

DESIGNED BY: C.W.K.
DRAWN BY: S.T.
CHECKED BY: J.R.
APPROVED BY: C.W.K.
DATE: March 2008

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REVISION

BY

DATE

17

OF 17

200 0 100 200 400

SCALE: 1" = 200'

	BOUNDARY LINE
—	EXISTING EDGE OF PAVEMENT
—	EXISTING OVERHEAD ELECTRIC
—	EXISTING WIRE FENCE
—	WATER LINE
—	WASTEWATER LINE
—	STORMSEWER LINE
—	UNDERGROUND ELECTRIC
—	OVERHEAD ELECTRIC
—	GAS LINE
—	FORCE MAIN
—	SINGLE WATER SERVICE
—	DOUBLE WATER SERVICE
—	SINGLE WASTEWATER SERVICE
—	DOUBLE WASTEWATER SERVICE
—	WATER LINE FITTINGS
—	GATE VALVE
—	REDUCER
—	AIR RELEASE VALVE
—	FIRE HYDRANT
—	CLEAN OUT
—	EXISTING 1 ft COURTOUR
—	EXISTING 5 ft COURTOUR
—	CURB AND GUTTER
—	PROPOSED SS INLET
—	STORMSEWER MANHOLE
—	WASTEWATER MANHOLE
—	TREE PROTECTION FENCE
—	SILT FENCE
—	SILT FENCE — STAGE 2 TO BE INSTALLED BY HOME BUILDER
—	LIMITS OF CONSTRUCTION
—	ROCK BERM
—	INLET PROTECTION

[illegible]

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JOHNSON RANCH
PHASE 1
WASTEWATER PLANT

SHEET NO.

3

OF 17

**NOTE:
NO WASTEWATER SERVICE
CONNECTIONS UNTIL APPROVAL
AND CONSTRUCTION OF LIFT
STATION AND WASTEWATER
TREATMENT FACILITY.**