SITE CONSTRUCTION PLANS

LEE'S SUMMIT HOSPITAL - REPLACEMENT HOSPITAL

2100 SE Blue Parkway

LOCATED IN THE

CITY OF LEE'S SUMMIT
JACKSON COUNTY, MISSOURI

CIVIL / SITEWORK PACKAGE

UTILITY COMPANY CONTACTS

WATER & SEWER	CITY OF LEE'S SUMMIT WATER UTILITIES ATTN: WES OWENS 616 NE DOUGLAS ST LEE'S SUMMIT, MO 64063 (816) 969-1940
NATURAL GAS	MISSOURI GAS AND ENERGY ATTN: KEVIN DRISKELL 100 NE TUDOR LEE'S SUMMIT, MO 64086 (816) 969-2217
ELECTRICAL POWER	AQUILA ENERGY ATTN: JEFF WILLIAMS 1105 E. 40 HIGHWAY BLUE SPRING, MO 64014 (816) 737-7777
TELEPHONE	SOUTHWESTERN BELL TELEPHONE CO. ATTN: TOM DOBSON 215 N. SPRING ST., 2ND FLOOR INDEPENDENCE, MO 64050-2822 (816) 325-5600
CABLE TELEVISION	TIME-WARNER CABLE ATTN: GREG JOHNSON 6550 WINCHESTER AVE. KANSAS CITY, MO 64113 (816) 222-5533

BEFORE EXCAVATING CALL: 1-800-DIG-RITE

FLOOD PLAIN:

The subject property lies within Zone C "Areas of minimal flooding" as shown on and according to FIRM Community-Panel Number 290174 0007 C, Dated August 3, 1989.

ACCESSIBLE PARKING

Accessible Parking shall be no more than 2.00% slope in any direction.

EXISTING ZONING:

The subject property is currently zoned as: CP-2

This zoning has the following setback provisions:
Front Yard Setback-20'
Rear Yard Setback-20'
Street Side Yard Setback-15'
Interior Side Yard Setback-10'
Maximum Building Height - 5 Stories or 60'

SITE DEVELOPMENT DATA

Total Site Area in Acres: 39.00±

Currently Proposed Developed Area = 20.69 Acres.

Conceptual Developed Area = 18.31 Acres.

Parking Required: See Parking Data Table (herein)

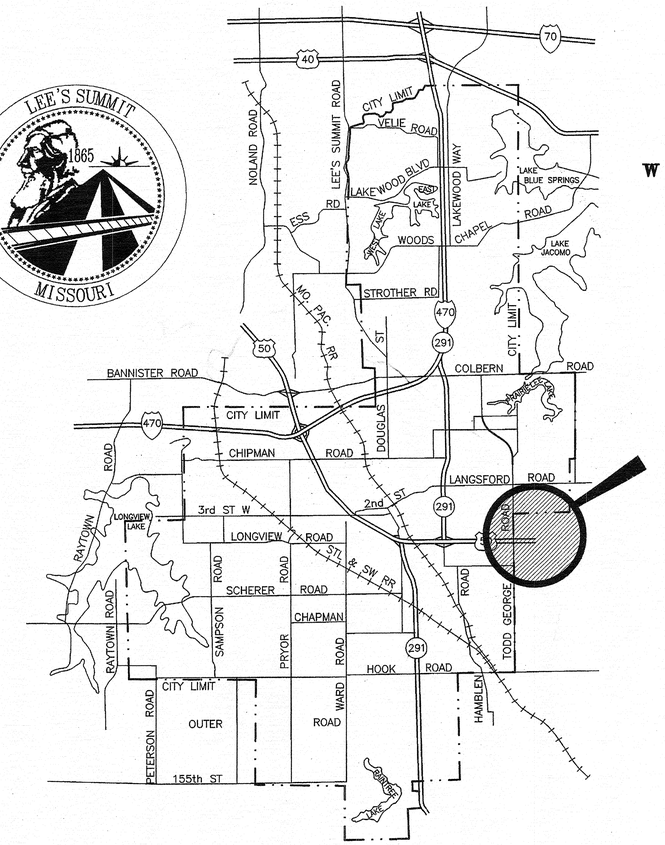
PROJECT BENCHMARK:

" □ " Cut on the North side of Concrete Base of North Post of Todd George Road Exit Sign for Westbound U.S. Highway 50. Approximately 30' South of the Centerline of the Outer Road.

Elevation = 1012.79

LEGEND OF SYMBOLS

- Signs
- Gas Test Station
- Water Meter
- Sprinkler Valve/Boxes
- Water Vault
- Sanitary Sewer Manhole
- Electric Manhole
- Street Light
- Power Pole
- Traffic Signal
- Elec. Box
- Guy Pole
- Right of Way Marker
- Guy Anchor
- Flood Light
- Fire Hydrant
- Existing Storm Sewer Line
- Existing Sanitary Sewer Line
- Existing Water Line
- Existing Gas Line
- Underdrain
- Existing Fence Line
- Telephone Vault
- Backflow Preventer
- Existing Easement
- Property Line
- Existing Tree To Be Removed
- Existing Tree To Remain
- Existing Trees
- Existing Contours
- Proposed Contours
- Boring Location
- Concrete Pavement
- Top of Curb Elevation
- Spot Grade Elevation
- Proposed Building Layout



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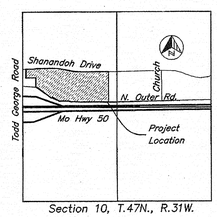

Section 10, T.47N., R.31W.

SECTION MAP

Scale: 1" = 2000'

INDEX OF DRAWINGS

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2	General Layout Sheet
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15	Concrete Pavement Jointing
16 - 17	Storm Sewer Profiles
18	Sanitary Sewer Profile and Details
19	Storm Drainage Map
20	Storm Drainage Calculations
21	Site Accessible Route Enlargements
22	Site Accessible Route and Ambulance Entry Enlargements
23	Site Accessible Route Enlargements
24	Erosion Control Plan
25 - 26	Detention Basin Details
27	Construction Details
28	Storm Sewer Details
29	Erosion Control Details

ESTIMATE OF QUANTITIES

DESCRIPTION	UNIT	QUANTITY
Curb and Gutter	L.F.	14,845
Riprap	S.Y.	395
Drive Area Pavement	S.Y.	15,580
Heavy Duty Concrete	S.Y.	3,095
Parking Stall Pavement	S.Y.	10,590
6" HDPE	L.F.	132
8" HDPE	L.F.	990
10" HDPE	L.F.	545
12" HDPE	L.F.	226
15" HDPE	L.F.	28
18" HDPE	L.F.	306
24" HDPE	L.F.	814
30" HDPE	L.F.	147
18" RCP	L.F.	91
30" RCP	L.F.	497
8" PVC	L.F.	315
6" Cleanout	EA.	3
8" Cleanout	EA.	13
10" Cleanout	EA.	8
12" Cleanout	EA.	3
Concrete Apron	L.F.	6
Concrete Encasement	L.F.	30
48" Band & Gasket C.S.P.	L.F.	33
18" RCP Flared End Section w/Conc. Toewall	EA.	1
24" RCP Flared End Section w/Conc. Toewall	EA.	1
30" RCP Flared End Section w/Conc. Toewall	EA.	8
4'x4' J.B.	EA.	1
5'x3' C.I.	EA.	15
5'x4' C.I.	EA.	2
6'x3' C.I.	EA.	1
6'x5' C.I.	EA.	1
11'x6' Weir Box w/ Concrete Wingwalls	EA.	1
Connect Roof Drain to Curb Inlet	EA.	7
15" Nyloplast Drain w/Standard Lock Down Grate	EA.	7
4' Diameter Manholes	EA.	3

PROJECT CONTACTS

Owner / Developer
Lee's Summit Hospital
530 NW Murray Road
Lee's Summit, Missouri
Contact: Mr. Scott Montgomery
Phone: (816)969-6060

Engineer
George Butler Associates, Inc.
One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219-9745
Phone: (913) 492-0400
Contact: Mr. Brad Burton

Architect
Perkins + Will
6200 North Central Expressway
Dallas, Texas 75206
Phone: (214)775-4826
Contact: Mr. Dwight Burns

Landscape Architect
Ochsner Hare & Hare
2600 Grand, Mezzanine Suite
Kansas City, Missouri 64108
Phone: (816)842-8844
Contact: Mr. Ken Boone

First Issue Date: 06-02-06 (As ASI #2)

Cover Sheet

GBA
GEORGE BUTLER ASSOCIATES, INC.
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Kansas • Missouri • Illinois
One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219-9745
(913) 492-0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25587
REGISTERED PROFESSIONAL ENGINEER
10/20/06

PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 - 06/02/06
ASI #7 - 10/20/06

DESIGNED
H.T.R. / J.W.M.
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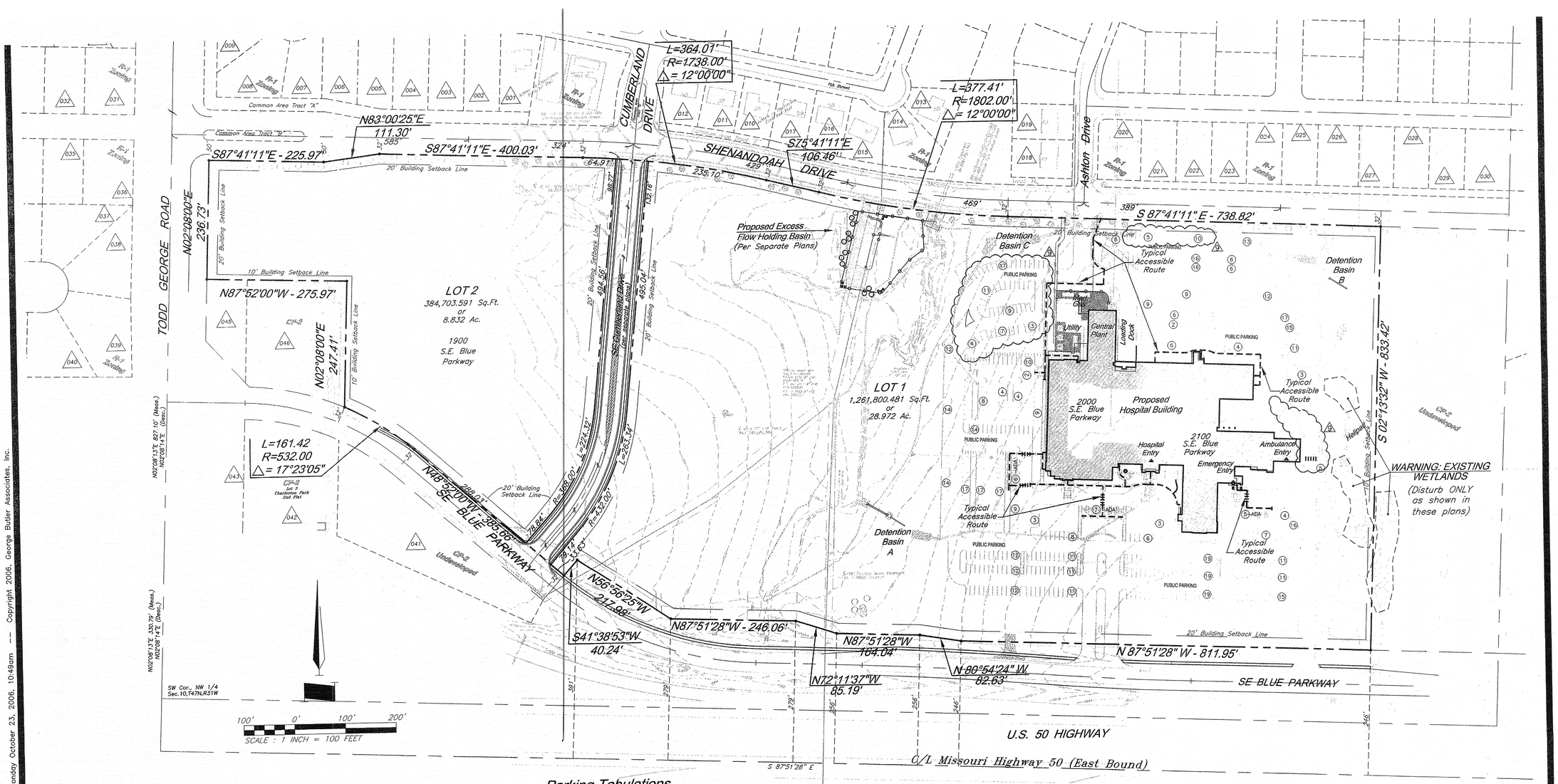
REVIEWED
B.D.B.
SHEET TITLE
Cover Sheet

SHEET NUMBER
1 of 29



General Notes:

1. The construction covered by these plans shall conform to all applicable standards and specifications of the Public Works Department of the City of Lee's Summit, Missouri, current usage. Contractor to contact public works inspections at (816) 969-7450 (48) hours prior to commencement of any construction activity.

2. Existing topography shown hereon is based on contour and topographic information as noted on the ALTA/ACSM Land Title Survey prepared for HCA, Midwest Division by Olsson Associates Consulting Engineers (dated 02/10/04) as provided to this engineer by the client. Additional land surveying field information gathered and prepared by this engineer has also been incorporated.

3. Soils Report – A soils report has been completed by Kleinfelder Geotechnical Engineering Services. ALL grading operations shall conform to the findings and recommendations noted within the soils report. A copy of the soils report and all boring logs is available for review at the offices of J.E. Dunn Construction. Any geo-technical information in this set of plans has been provided by Kleinfelder. George Butler Associates, Inc. is not responsible for the adequacy or accuracy of the soils information shown or provided. It is provided for informational purposes only. The content of these plans may change based on recommendations found in the final geotechnical report.

4. This site is currently under construction. Grading operations have begun per a Mass Grading Package previously submitted and approved by the City of Lee's Summit. Contractor shall obtain a set of those drawings for his review to determine the extent of the improvements under way. The contractor of these plans shall be responsible for ALL erosion control installed per the Mass Grading Package and shall maintain those erosion control measures (in addition to those measures shown in these plans) once mass grading operations are complete and construction of these plans begins.

5. Existing Utilities – The locations of existing underground utilities are approximate and have not been field verified by the Owner or it's representative. The Contractor shall determine the exact location of all existing utilities before commencing work. The Contractor is fully responsible for any and all damages occurring from his failure to do so. The Contractor shall coordinate the relocation of any utilities that may be encountered prior to the start of construction.

6. Slopes – Slopes shall be graded at a maximum slope of 3:1 (Horz.:Vert.). It is critical that grading shown in and around building pad be accomplished accurately so drainage away from building pad is maintained at all times.

7. Existing Site Conditions – The Contractor shall, prior to commencing work, investigate surface and subsurface conditions to be encountered across the project site and notify the Engineer if any discrepancies or changed conditions are noted.

8. The contractor is responsible for the protection of all property corners and section corners. Any property corners and/or section corners disturbed or damaged by construction activities shall be reset by a Registered Land Surveyor licensed in the State of Missouri, at the contractor's expense.

9. Cut/Fill – All fills are to be made with suitable structural fill material in accordance with the project geo-technical engineer recommendations. Special inspections are required. Contractor shall coordinate inspections with the Owner.

10. The Contractor shall be responsible for the restoration of the right-of-way and for damaged improvements such as curbs, sidewalks, street light and traffic signal junction boxes, traffic signal loop lead ins, signal poles, etc. Damaged improvements shall be repaired in conformance with the latest City standards and to the City's satisfaction.

11. The Contractor shall coordinate and conduct a pre-construction walk-thru with the City of Lee's Summit Public Works Department to review and document the condition of all existing public improvements (i.e. pavements, walks landscaping, etc.) surrounding the site.

12. All disturbed areas within the Public right-of-way shall be sodded. All other disturbed areas shall be seeded in accordance with the project specifications.

Parking Tabulations

Proposed Phase One	Req'd.	Prov'd.
Hospital 64 Bed (2-Story)(123,460 Sq. Ft.) City Code Requires a Minimum of 1.8 Spaces per Proposed Hospital Bed.	116	
Outpatient/Medical Office (MOB) 66,296 Sq. Ft. Bldg. (2-Story) City Code Requires a Minimum of 5 Spaces per 1000 Square Feet of Proposed Medical Office Use.	332	
Sub-Total Parking	448*	606**
Accessible Parking Spaces City Code Requires that a Minimum of 2% of the Total Spaces for Parking Areas of 501 to 1000 Spaces be Accessible, with 1 in 8 of those Spaces being Van Accessible.		
Total Accessible Spaces	12	23
Van Accessible Spaces	(2)	(5)
Ambulance Parking Spaces No Code Requirement for Ambulance Spaces		
Ambulance Spaces	0	8

* Parking Count Includes Required Accessible Spaces

** Parking Count Includes Required Accessible Spaces and Provided Ambulance Spaces.

Note: It is intended that 158 of the parking spaces constructed with Phase One will be "credited" to the required number of spaces for the future construction of Phase Two.

Trash Enclosures

There are no trash enclosures planned for the site. Trash will be disposed of via trash compactor located in the loading dock area on the north side of the hospital building.

Site ADA Accessibility

See Sheets 21, 22, 23 and 27 for Site Accessibility Routes, Notes and Details.

Impervious Coverage

Total Site Area	1,698,840 sq. ft. or 39.00 Acres
Phase 1	392,677.39 sq. ft. or 23.11%
Phase 2	416,633.85 sq. ft. or 24.52%
Phase 3	757,214.92 sq. ft. or 44.57%

Impervious Coverage based on a platted Lot 1 Area of 1,261,800.481 Sq. Ft. is equal to 405,697.82 Sq. Ft. or 33.2%.

Floor Area Ratios - (FAR)

Phase 1 – Hospital	11% FAR
Phase 2 – Hospital with all Expansions	18% FAR
Phase 3 – Hospital with all Expansions and West Sites Medical Office Bldgs.	22% FAR

Water Installation Notes:

1. Connection materials shall be pre-assembled and excavation of the existing water main shall be completed at each of two points of connection prior to water service shutdown and connection installation in order to minimize disruption to water service.

2. When a disruption of water service will occur, the Contractor shall notify Water Utilities Operations at least 48 hours in advance to make the necessary arrangements. Water Utilities Operations can be reached at (816)969-1940.

3. The interior of the connection assembly shall be completely swabbed with a 100 ppm chlorine solution immediately prior to installation.

4. Excavation bottoms for interconnections shall have gravel base and sumps as required to prevent the entry of trench water and debris into the water main and assemblies during installation. Water mains shall be capped at all times when construction is not occurring on them.

5. Contractor shall excavate and expose location, size, and material of construction of existing water mains for each interconnection with the new 12" Dia. water, including locations of pipe joints. Contractor shall provide all required interconnecting material and fittings at his expense.

6. The Contractor shall be responsible for providing all required temporary disinfection and water main flushing fittings and connections.

7. All flushing of water mains shall be coordinated with and approved by the City of Lee's Summit.

8. Contractor shall provide all equipment and material required for disinfection and dechlorination of the flush water.

9. Contractor shall be responsible for the collection and testing of all required water samples for verification of disinfection of installed watermains.

10. All water main valves and fire hydrants shall be operated only by City personnel, unless prior written approval has been issued by the City to the Contractor.

11. Minimum water main depth of burial is 42 inches (3.5 feet) as measured from the top of the pipe to the existing ground or finished grade, whichever is lower.

12. Maximum water main depth of burial is 84 inches (7 feet) from the top of the pipe to the finished grade.

13. The Contractor shall disinfect and test all mains and fire lines regardless of existing conditions. This may include repairing existing facilities that must be included in the test and are not capable of holding test pressures. All thrust blocks or other bracing facilities shall be in place at least 48 hours before the initial filling of the line. All tests will be administered by the City.

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NUMBER E-22682
REGISTERED PROFESSIONAL ENGINEER
10/23/06

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First Issue as: ASI #2 – 06/02/06
Δ ASI #7 – 10/20/06

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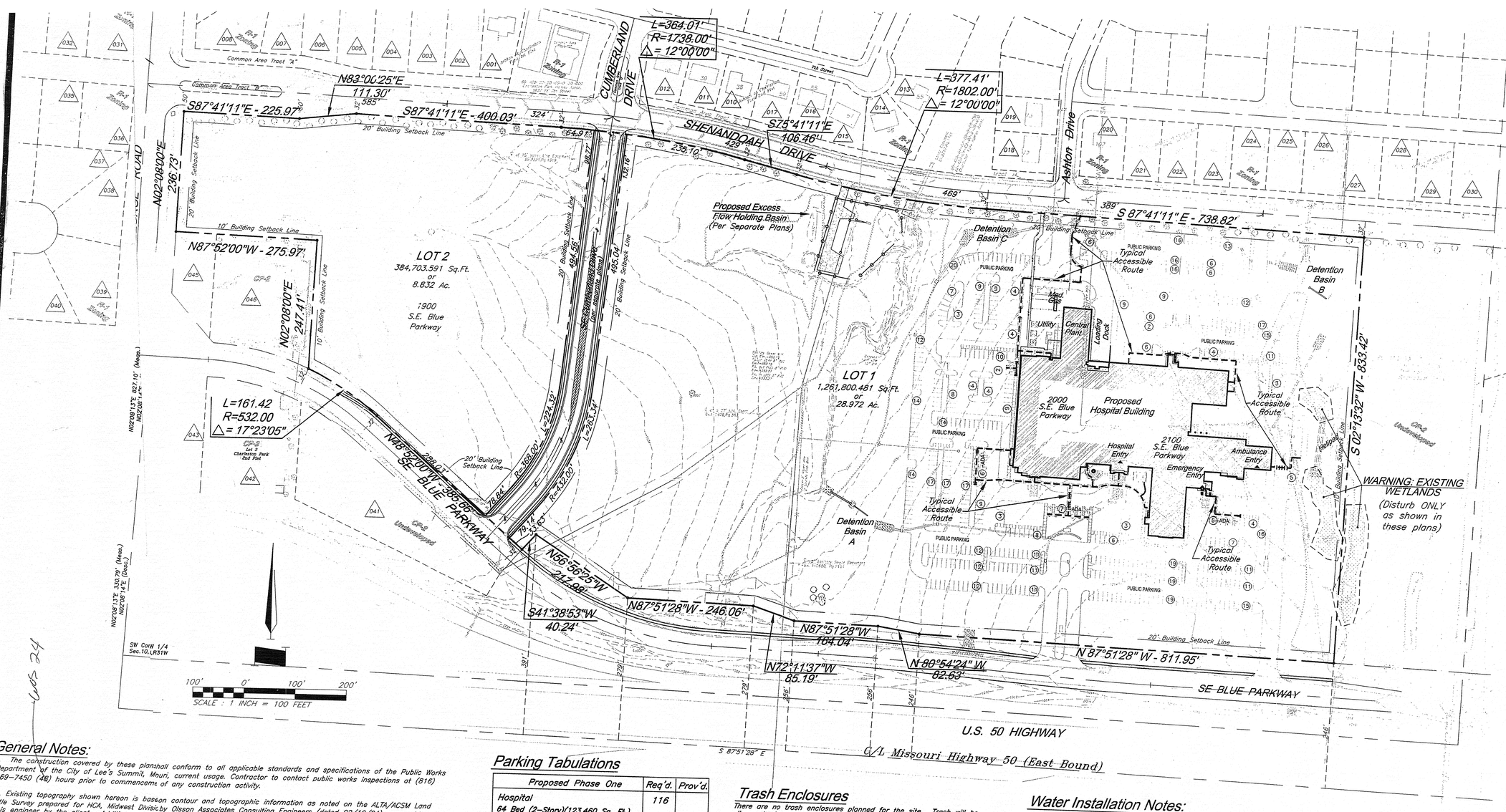

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NUMBER E-25862
REGISTERED PROFESSIONAL ENGINEER
6/2/06

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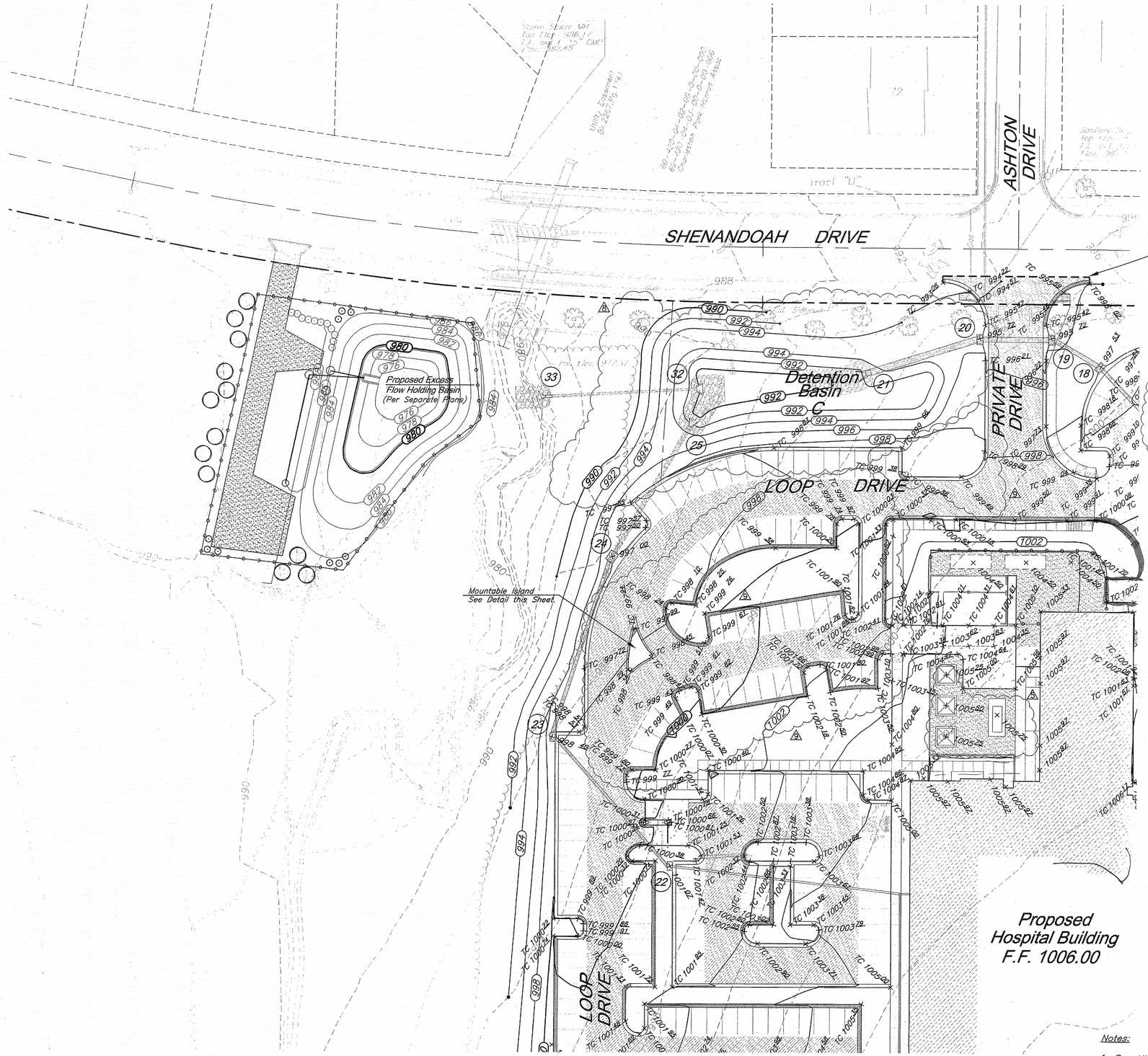
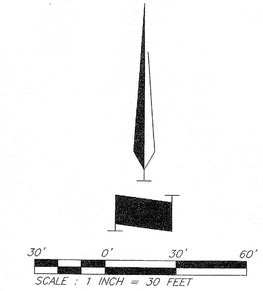
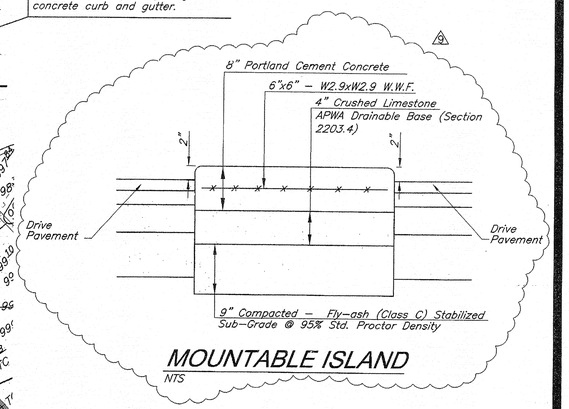






MOUNTABLE ISLAND
NTS

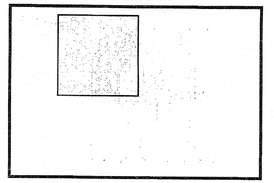
SYMBOLS LEGEND

- Existing Tree To Be Removed
- Existing Tree To Remain
- Existing Trees
- Existing Contours
- 1040 Proposed Contours
- B-1 Boring Location
- Concrete Pavement
- TC 1006.00 / 1006.00 Top of Curb Elevation / Spot Grade Elevation
- Proposed Building Layout

PAVING LEGEND

- Heavy Duty Concrete Pavement
- Drive Area Pavement
- Parking Area Pavement
- Dry Curb

PLAN SHEET KEY MAP



Grading Plan

Notes:

1. See Utility Sheets for Storm Sewer Construction Plans.
2. All curbs shown are type CG-1 unless otherwise noted.
3. See Sheets 21, 22 and 23 for ADA Accessibility Routing and Grades.

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2 Revised – RFI #100 – 07/26/06
4 Revised – RFI #127 – 09/21/06
5 ASI #7 – 10/20/06

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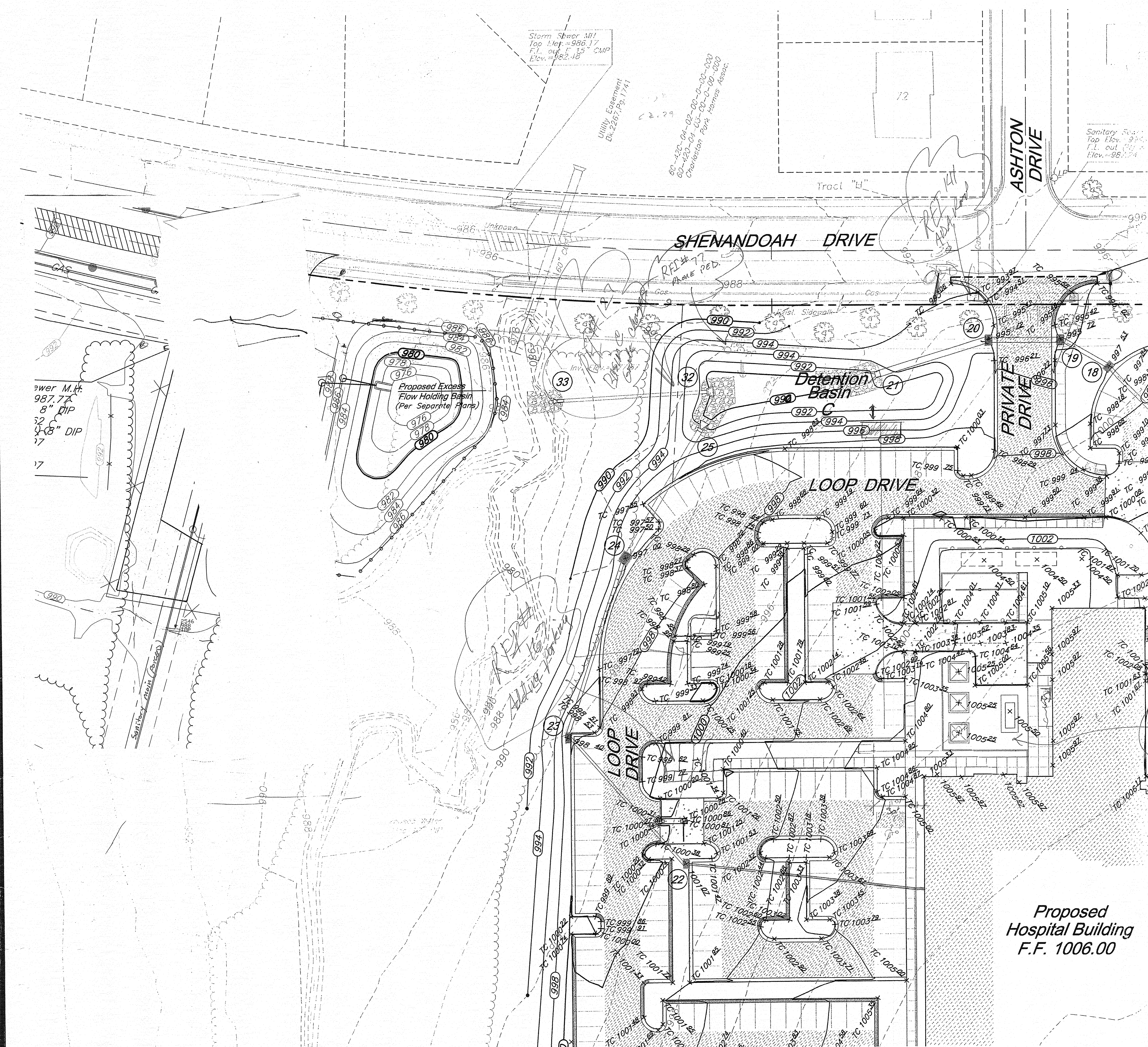
B.I.B.

REVIEWED
B.D.B.

SHEET TITLE
Site Grading Plan

SHEET NUMBER
3 of 29

G:\10367\10367Ldet\dwg\Civil\Site Construction Documents\10367C0803.dwg Layout: 03 Grading Plan



Contractor to saw cut and remove 86 L.F. concrete curb and gutter and saw cut edge of existing pavement full depth as needed to create a smooth construction joint for proposed asphalt paving and concrete curb and gutter.

30' 0' 30' 60'
SCALE : 1 INCH = 30 FEET

Notes:

1. See Utility Sheets for Storm Sewer Construction Plans.
2. All curbs shown are type CG-1 unless otherwise noted.
3. See Sheets 21, 22 and 23 for ADA Accessibility Routing and Grades.

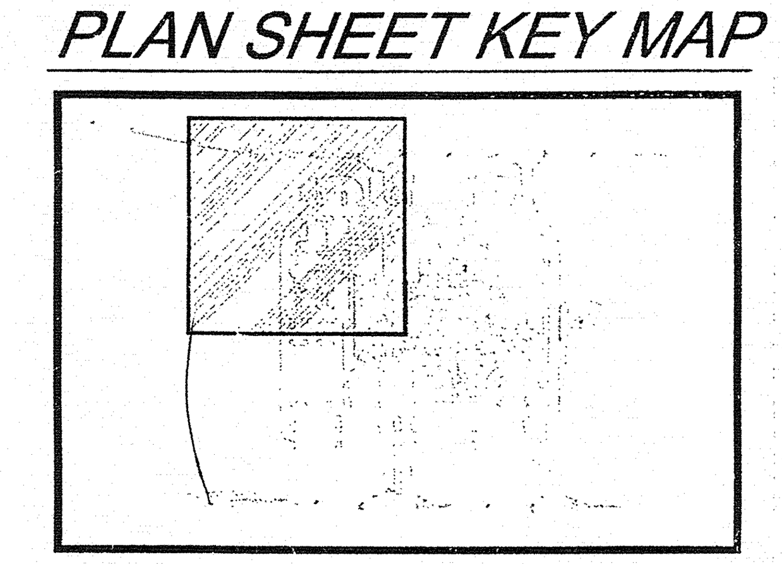
SYMBOLS LEGEND

- Existing Tree To Be Removed
- Existing Tree To Remain
- Existing Trees
- Existing Contours
- Proposed Contours
- Boring Location
- Concrete Pavement
- Top of Curb Elevation
- Spot Grade Elevation
- Proposed Building Layout

PAVING LEGEND

- Heavy Duty Concrete Pavement
- Drive Area Pavement
- Parking Area Pavement
- Dry Curb

PLAN SHEET KEY MAP



Grading Plan

GBA
GEORGE BUTLER ASSOCIATES, INC.
Engineers • Architects
Kansas • Missouri • Illinois
One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219-9745
(913) 492-0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI — BRADLEY D. BURTON — NUMBER E-25887 — REGISTERED PROFESSIONAL ENGINEER

PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 – 06/02/06

DESIGNED
H.T.R. / J.W.M.

DRAWN
B.I.B.

REVIEWED
B.D.B.

SHEET TITLE
Site Grading Plan

SHEET NUMBER
3 of 29

Contractor to saw cut and remove 78 L.F. concrete curb and gutter and saw cut edge of existing pavement full depth as needed to create a smooth construction joint for proposed asphalt paving and concrete curb and gutter.

SHENANDOAH DRIVE

LOOP DRIVE

AMBULANCE DRIVE

Detention Basin B

Type CG-1 Concrete Curb and Gutter (typ.)

Type CG-1A Concrete Curb and Gutter (typ.)

Construct 31.00 L.F. of Concrete Loading Dock Retaining Wall. See Sheet 27 for details.

Retaining Wall (per Mass Grading Plans)

Transition Curb from 3" in Height at Building to 6" in Height in 19'

Edge of Wetlands

Proposed Hospital Building F.F. 1006.00

30' 0' 30' 60'

SCALE : 1 INCH = 30 FEET

Notes:

1. See Utility Sheets for Storm Sewer Construction Plans.
2. All curbs shown are type CG-1 unless otherwise noted.
3. See Sheets 21, 22 and 23 for ADA Accessibility Routing and Grades.

SYMBOLS LEGEND

- Existing Tree To Be Removed
- Existing Tree To Remain
- Existing Trees
- Existing Contours
- 1040 Proposed Contours
- B-1 Boring Location
- Concrete Pavement
- TC 1006.50 Top of Curb Elevation
- 1006.50 Spot Grade Elevation
- Proposed Building Layout

PAVING LEGEND

- Heavy Duty Concrete Pavement
- Drive Area Pavement
- Parking Area Pavement
- Type CG-1A Dry Curb

PLAN SHEET KEY MAP

Grading Plan

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GEORGE BUTLER ASSOCIATES, INC.
Engineers • Architects
Kansas • Missouri • Illinois
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9801 Renner Boulevard
Lenexa, Kansas 66219-9745
(913) 402-0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25952
REGISTERED PROFESSIONAL ENGINEER
10/23/06

PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 – 06/02/06
1 Revised – RFI #082 – July 11, 2006
2 Revised – RFI #090 – July 14, 2006
3 ASI #7 – 10/20/06

DESIGNED
H.T.R. / J.W.M.

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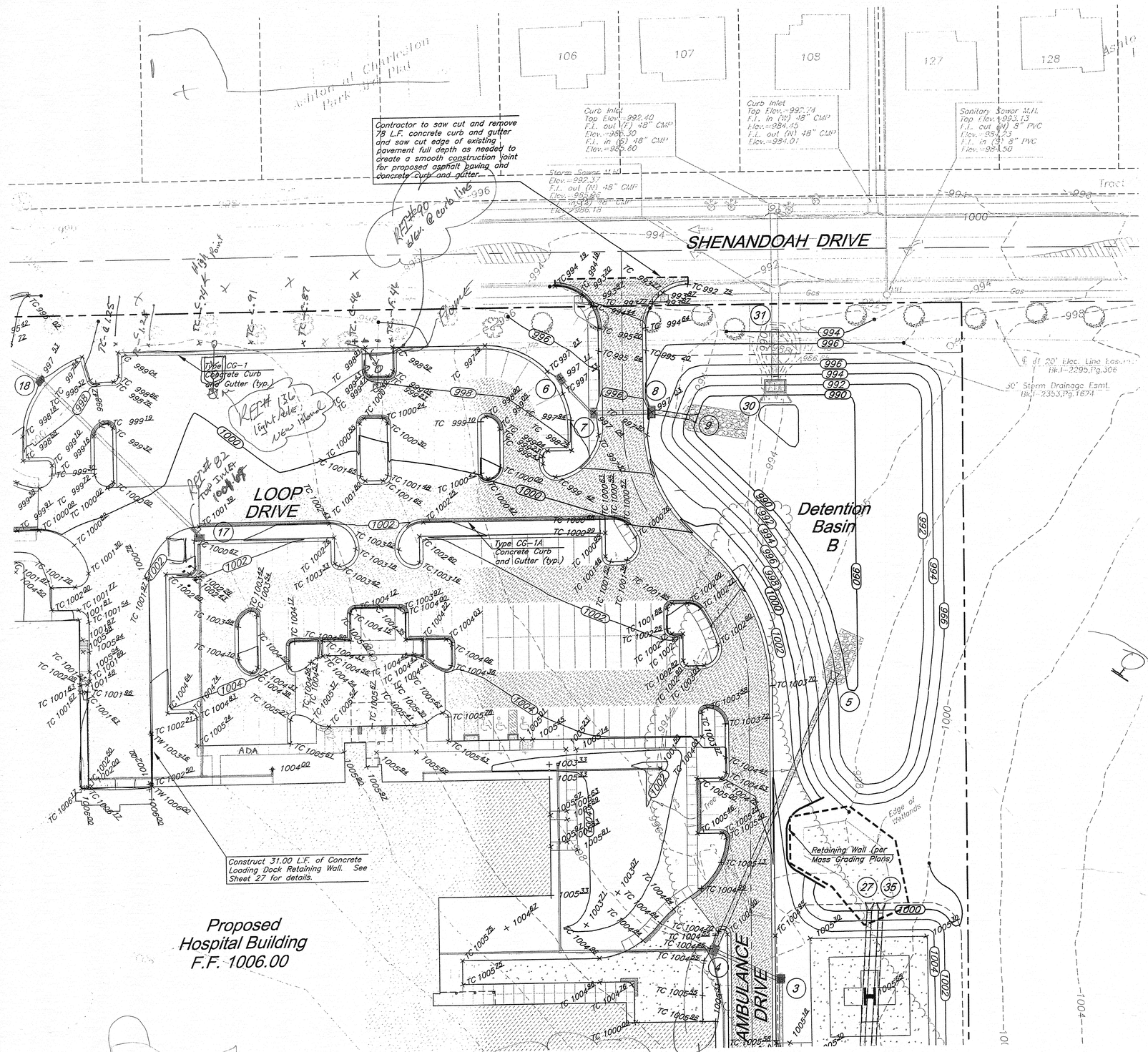
B.I.B.

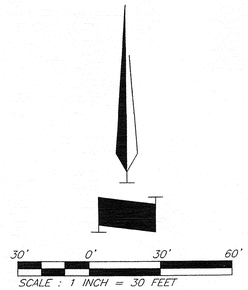
REVIEWED
B.D.B.

SHEET TITLE
Site Grading Plan

SHEET NUMBER
4 of 29



Storm INLET Roof Leader Junction Box



Notes:

1. See Utility Sheets for Storm Sewer Construction Plans.
2. All curbs shown are type CG-1 unless otherwise noted.
3. See Sheets 21, 22 and 23 for ADA Accessibility Routing and Grades.

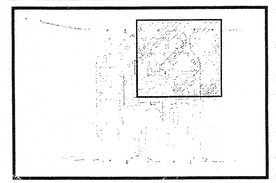
SYMBOLS LEGEND

- Existing Tree To Be Removed
- Existing Tree To Remain
- Existing Trees
- Existing Contours
- 1040 Proposed Contours
- B-1 Boring Location
- Concrete Pavement
- TC 1005.00 / 1006.00 Top of Curb Elevation / Spot Grade Elevation
- Proposed Building Layout

PAVING LEGEND

- Heavy Duty Concrete Pavement
- Drive Area Pavement
- Parking Area Pavement
- Type CG-1A Dry Curb

PLAN SHEET KEY MAP



Grading Plan

GEORGE BUTLER ASSOCIATES, INC.
Engineers • Architects
Kansas • Missouri • Illinois
One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219-9745
(913) 492-0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25662
REGISTERED PROFESSIONAL ENGINEER

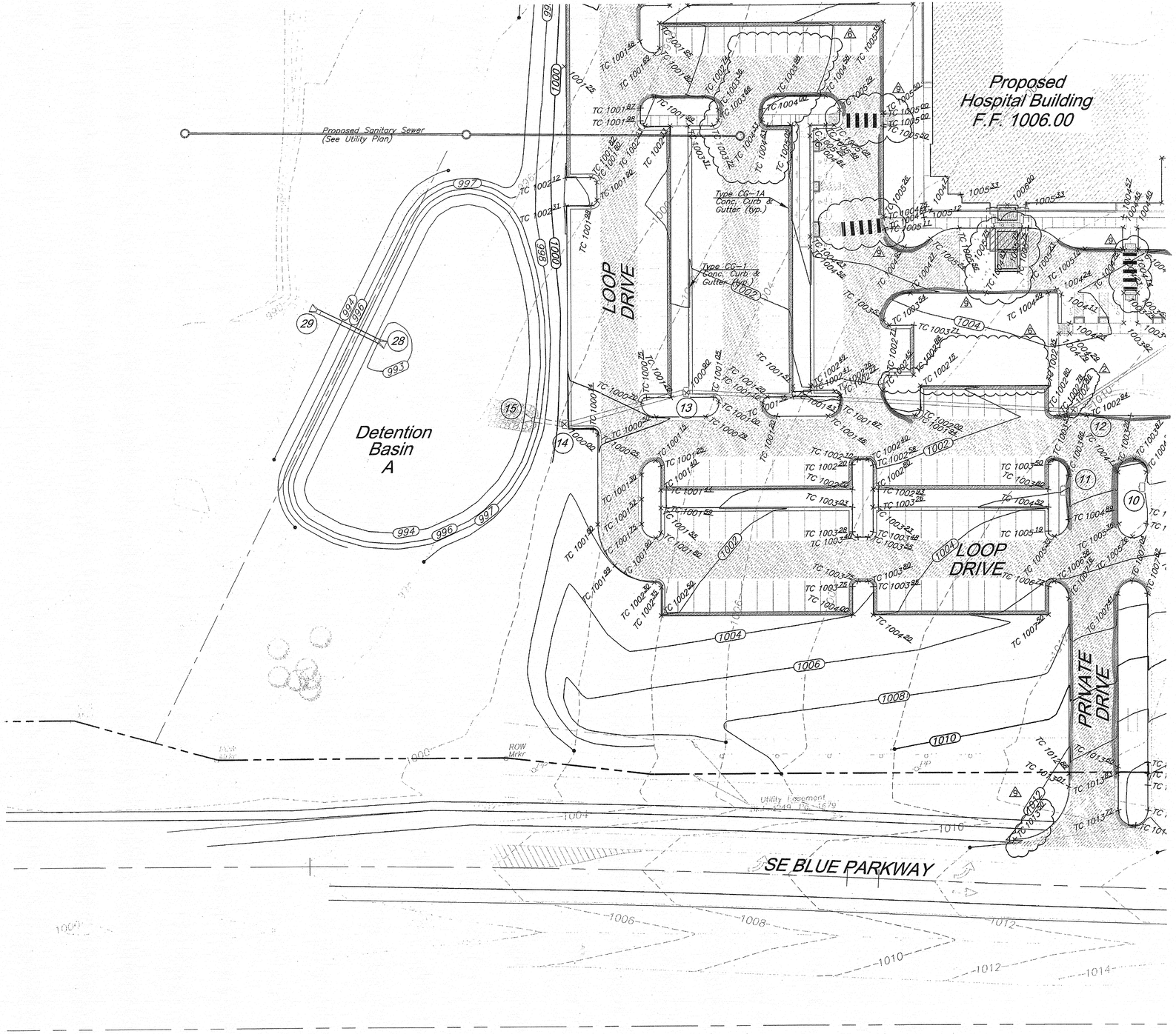
PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 – 06/02/06

DESIGNED
H.T.R. / J.W.M.
DRAWN
B.I.B.
REVIEWED
B.D.B.

SHEET TITLE
Site Grading Plan

SHEET NUMBER
4 of 29



Notes:

1. See Utility Sheets for Storm Sewer Construction Plans.
2. All curbs shown are type CG-1 unless otherwise noted.
3. See Sheets 21, 22 and 23 for ADA Accessibility Routing and Grades.

30' 0' 30' 60'
SCALE : 1 INCH = 30 FEET

Note: Step Details Removed

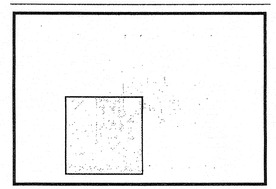
SYMBOLS LEGEND

- Existing Tree To Be Removed
- Existing Tree To Remain
- Existing Trees
- Existing Contours
- 1040 Proposed Contours
- B-1 Boring Location
- Concrete Pavement
- TC 1006.00 Top of Curb Elevation
- 1006.00 Spot Grade Elevation
- Proposed Building Layout

PAVING LEGEND

- Heavy Duty Concrete Pavement
- Drive Area Pavement
- Parking Area Pavement
- Type CG-1A Dry Curb

PLAN SHEET KEY MAP



Grading Plan

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GEORGE BUTLER ASSOCIATES, INC.
Engineers • Architects
Kansas • Missouri • Illinois
One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219-9745
(913) 492-0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25862
REGISTERED PROFESSIONAL ENGINEER
10/23/06

PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 – 06/02/06
2 Revised – RFI #082 – July 11, 2006
3 Revised – RFI #0118 – 08/07/06
4 ASI #7 – 10/20/06

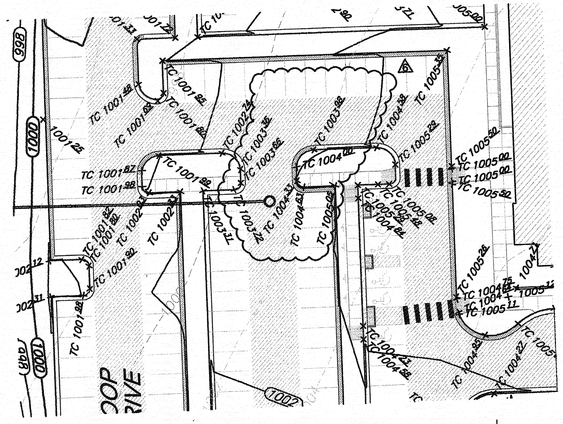
DESIGNED
H.T.R. / J.W.M.

DRAWN
B.I.B.

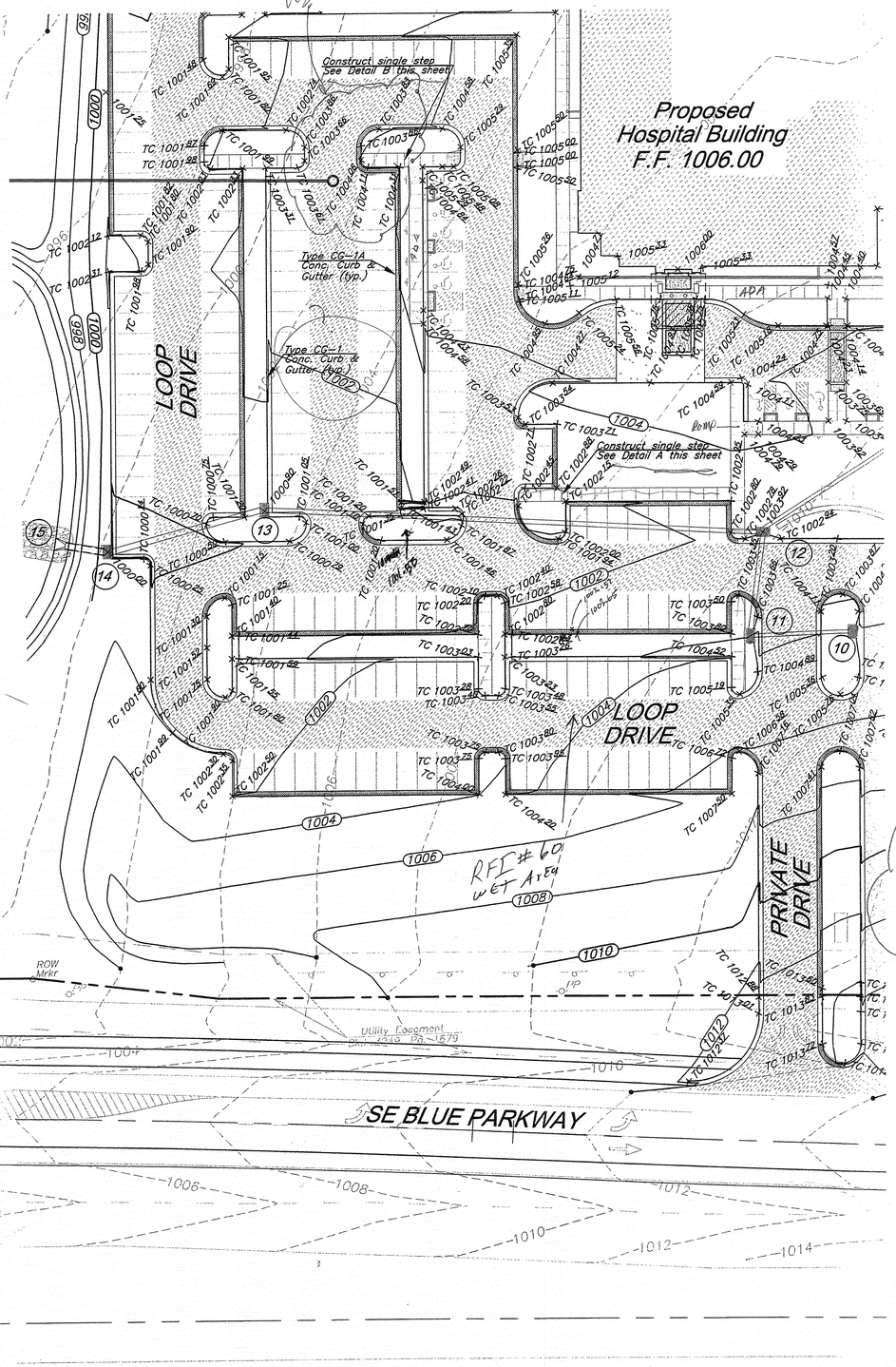
REVIEWED
B.D.B.

SHEET TITLE
Site Grading Plan

SHEET NUMBER
5 of 29



GBA GEORGE BUTLER ASSOCIATES, INC. Engineers • Architects Kansas • Missouri • Illinois	PROJECT NUMBER 10367.00 DATE 08/07/06	TITLE Request for Information Number 0118 HCA Lee's Summit	SHEET NUMBER RFI.118a

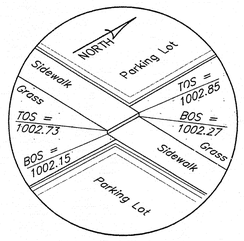


Notes:

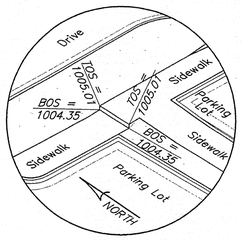
1. See Utility Sheets for Storm Sewer Construction Plans.
2. All curbs shown are type CG-1 unless otherwise noted.
3. See Sheets 21, 22 and 23 for ADA Accessibility Routing and Grades.

RFI# 118 Re-grading parking area to eliminate steps

30' 0' 30' 60'
SCALE : 1 INCH = 30 FEET



Detail A



Detail B

LEGEND
TOS = Top of Step
BOS = Bottom of Step

STEP DETAILS
N.T.S.

Storm Inlet
Rock Loader Junction Box

RFI# 82 Curb Inlet's #10-11-12 Ele. Do Not Give w/profile

#10 → 1004.63
11 → 1004.09
12 → 1002.86

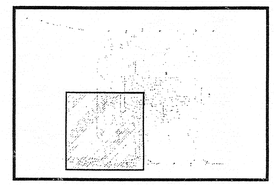
SYMBOLS LEGEND

- Existing Tree To Be Removed
- Existing Tree To Remain
- Existing Trees
- Existing Contours
- 1040 Proposed Contours
- B-1 Boring Location
- Concrete Pavement
- TC 1006.89 Top of Curb Elevation
- 1006.89 Spot Grade Elevation
- Proposed Building Layout

PAVING LEGEND

- Heavy Duty Concrete Pavement
- Drive Area Pavement
- Parking Area Pavement
- Type CG-1A Dry Curb

PLAN SHEET KEY MAP



Grading Plan

GBA GEORGE BUTLER ASSOCIATES, INC.
Engineers • Architects
Kansas • Missouri • Illinois
One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219-9745
(913) 492-0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25857
REGISTERED PROFESSIONAL ENGINEER
12/01

PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 – 06/02/06

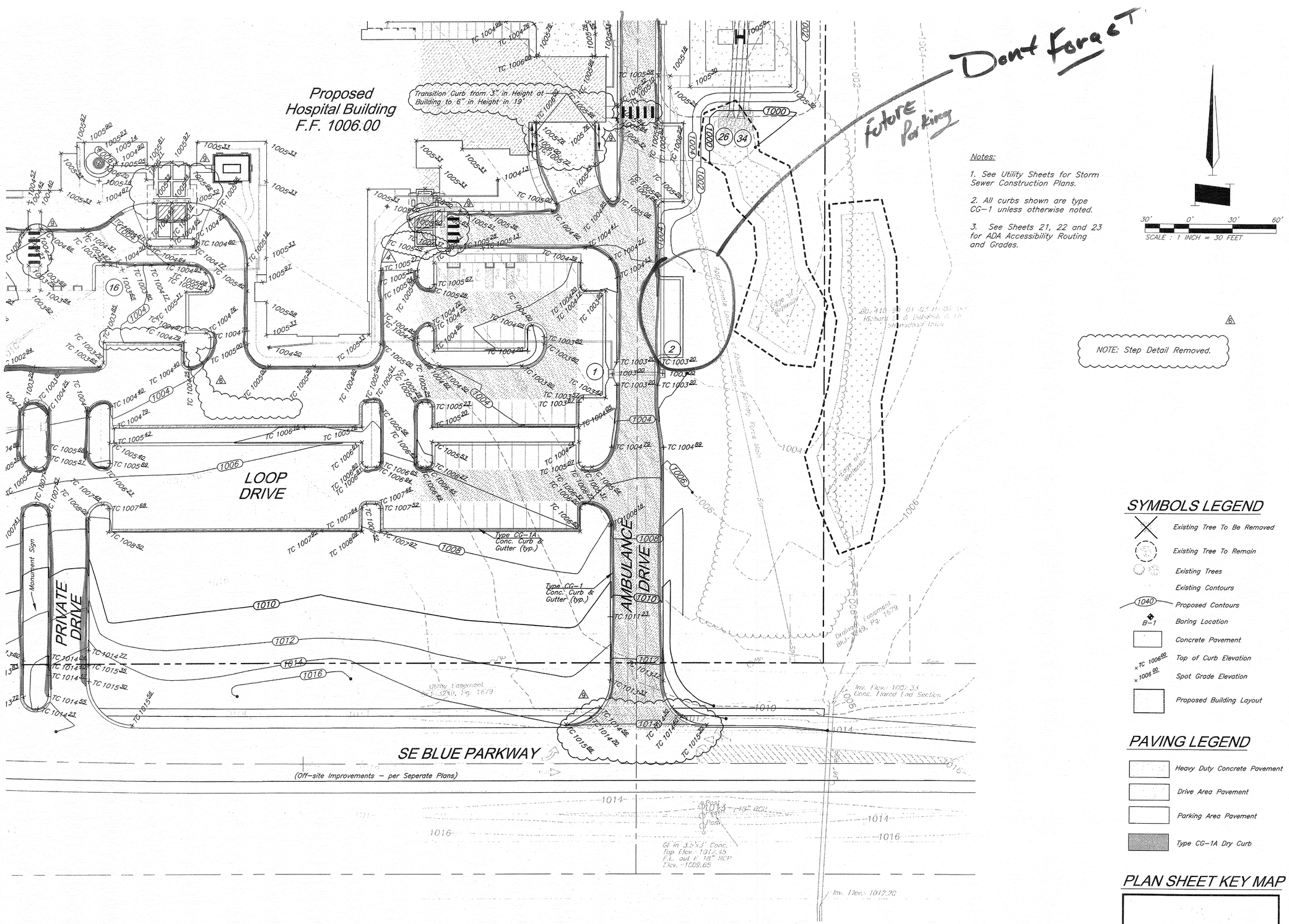
DESIGNED
H.T.R. / J.W.M.

DRAWN
B.I.B.

REVIEWED
B.D.B.

SHEET TITLE
Site Grading Plan

SHEET NUMBER
5 of 29



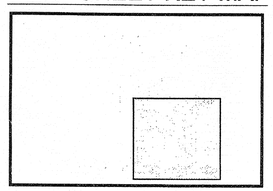
SYMBOLS LEGEND

- Existing Tree To Be Removed
- Existing Tree To Remain
- Existing Trees
- Existing Contours
- 1040 Proposed Contours
- B-1 Boring Locotion
- Concrete Pavement
- TC 1006.82 / 1006.82 Top of Curb Elevation / Spot Grade Elevation
- Proposed Building Layout

PAVING LEGEND

- Heavy Duty Concrete Pavement
- Drive Area Pavement
- Parking Area Pavement
- Type CG-1A Dry Curb

PLAN SHEET KEY MAP



Grading Plan

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Engineers • Architects
Kansas • Missouri • Illinois
One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219-9745
(913) 402-0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway

Southeast Corner of Todd George Road and Shenandoah Drive

Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-20562
REGISTERED PROFESSIONAL ENGINEER
10/13/06

PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 - 06/02/06
4 Revised per RFI #093 - 07/18/06
5 Revised per RFI #0118 - 08/07/06
6 ASI #7 - 10/20/06

DESIGNED
H.T.R. / J.W.M.

DRAWN
B.I.B.

REVIEWED
B.D.B.

SHEET TITLE
Site Grading Plan

SHEET NUMBER
6 of 29

Proposed Hospital Building F.F. 1006.00

LOOP DRIVE

PRIVATE DRIVE

AMBULANCE DRIVE

SE BLUE PARKWAY

(Off-site Improvements – per Seperate Plans)

Construct single step See Detail C this sheet

Type CG-1A Conc. Curb & Gutter (typ.) Dry

Type CG-1 Conc. Curb & Gutter (typ.) Wet

Monument Sign

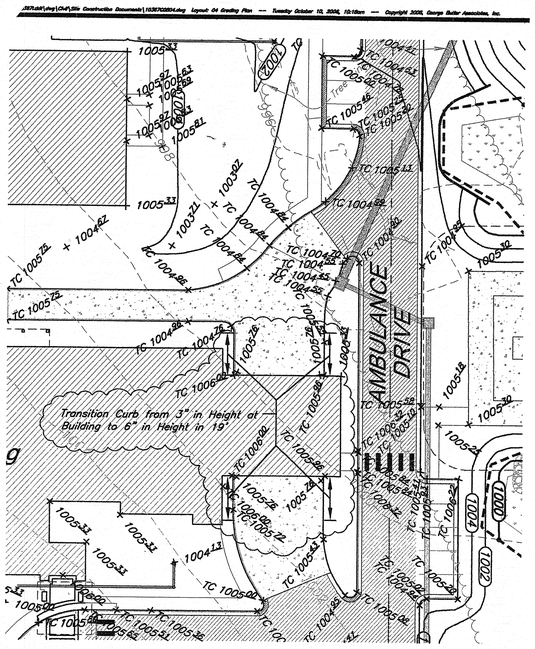
Utility Easement Bk 1-3249, Pg. 1679

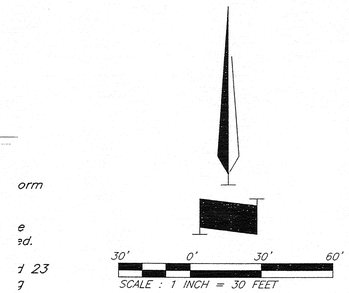
Inv. Elev.=1007.33 Conc. Flared End Section

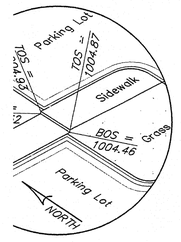
Inv. Elev.=1012.20

Diff 60 from 36" in 3.5'x3' Conc. Inv. Elev.=1012.45 Out 6 18" RCP Elev.=1009.85

Transition Curb from 3" in Height at Building to 6" in Height in 15'







LEGEND
TOS – Top of Step
BOS – Bottom of Step

Detail C

STEP DETAILS

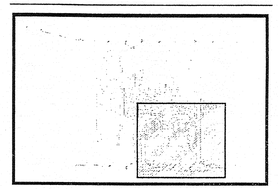
SYMBOLS LEGEND

- Existing Tree To Be Removed
- Existing Tree To Remain
- Existing Trees
- Existing Contours
- (1040) Proposed Contours
- B–1 Boring Location
- Concrete Pavement
- +TC 1006.60 / ×1006.90 Top of Curb Elevation / Spot Grade Elevation
- Proposed Building Layout

PAVING LEGEND

- Heavy Duty Concrete Pavement
- Drive Area Pavement
- Parking Area Pavement
- Type CG–1A Dry Curb

PLAN SHEET KEY MAP



Grading Plan

PROJECT NUMBER	TITLE	SHEET NUMBER
10367.00	Contractors RFI #174 HCA Lee's Summit	RFI.174
DATE 10/10/06		

GBA GEORGE BUTLER ASSOCIATES, INC. Engineers • Architects Kansas • Missouri • Illinois

GEORGE BUTLER ASSOCIATES, INC.
Engineers • Architects
Kansas • Missouri • Illinois
One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219–9745
(913) 492–0400

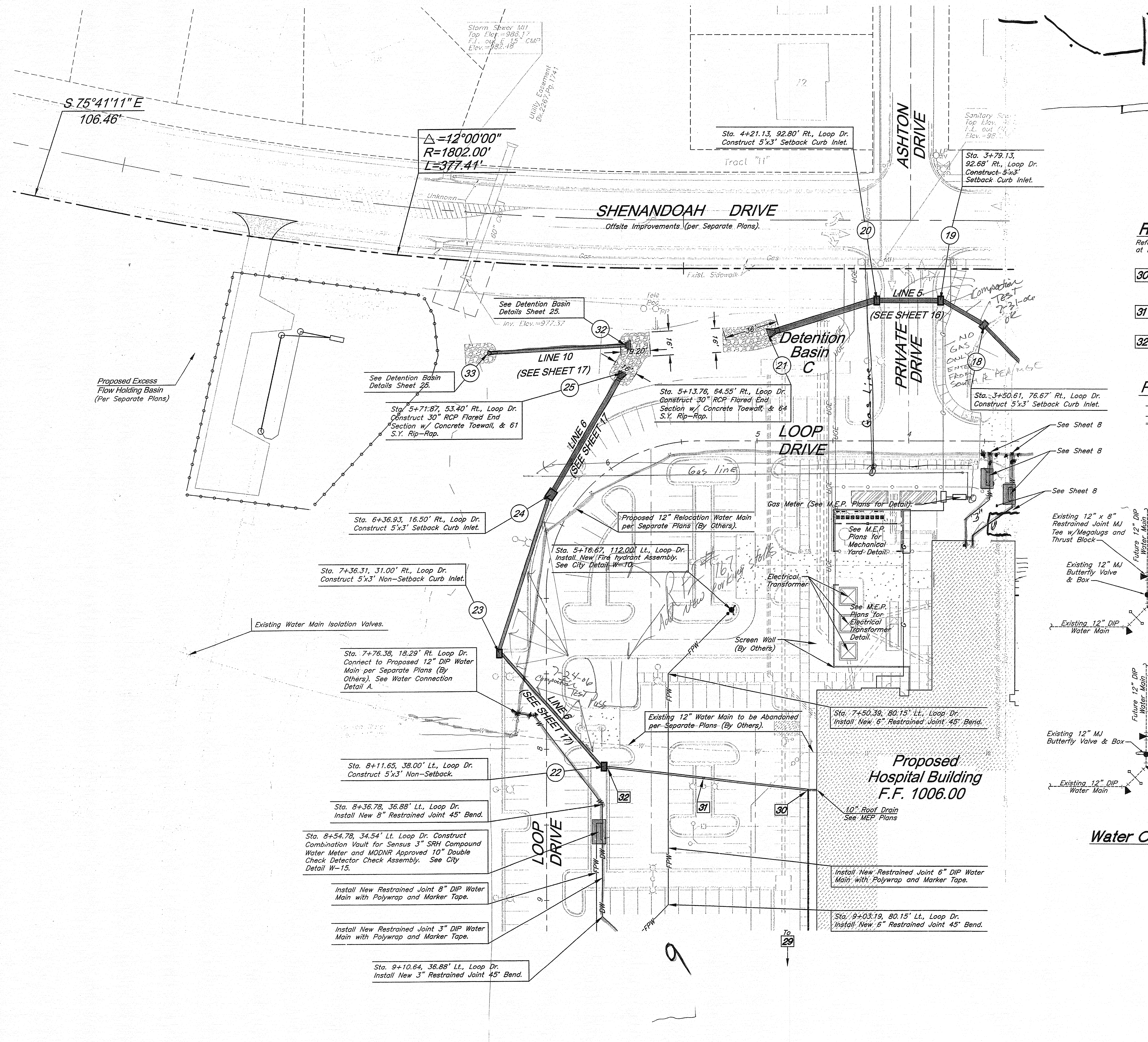
Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E–25662
REGISTERED PROFESSIONAL ENGINEER
6/2/06

PROJECT NUMBER	10367.00
DATE	First Issue as: ASI #2 – 06/02/06
DESIGNED	H.T.R. / J.W.M.
DRAWN	B.I.B.
REVIEWED	B.D.B.
SHEET TITLE	Site Grading Plan
SHEET NUMBER	6 of 29



S 75°41'11" E
106.46'
Δ=12°00'00"
R=1802.00'
L=377.41'
Storm Sewer MH
Top Elev.=988.37
F.L. out E 15" CMP
Elev.=982.48
Utility Easement Bk.267 Pg.1741
Tract "H"
ASHTON DRIVE
SHENANDOAH DRIVE
Offsite Improvements (per Separate Plans).
Sta. 4+21.13, 92.80' Rt., Loop Dr. Construct 5'x3' Setback Curb Inlet.
Sta. 3+79.13, 92.68' Rt., Loop Dr. Construct 5'x3' Setback Curb Inlet.
Sanitary Sewer
See Detention Basin Details Sheet 25.
Inv. Elev.=977.37
LINE 10 (SEE SHEET 17)
LINE 5 (SEE SHEET 16)
Detention Basin C
PRIVATE DRIVE
See Detention Basin Details Sheet 25.
Proposed Excess Flow Holding Basin (Per Separate Plans)
Sta. 5+71.87, 53.40' Rt., Loop Dr. Construct 30" RCP Flared End Section w/ Concrete Toewall, & 61 S.Y. Rip-Rap.
Sta. 5+13.76, 64.55' Rt., Loop Dr. Construct 30" RCP Flared End Section w/ Concrete Toewall, & 64 S.Y. Rip-Rap.
Sta. 3+50.61, 76.67' Rt., Loop Dr. Construct 5'x3' Setback Curb Inlet.
LOOP DRIVE
LINE 6 (SEE SHEET 17)
Gas line
See Sheet 8
See Sheet 8
See Sheet 8
Sta. 6+36.93, 16.50' Rt., Loop Dr. Construct 5'x3' Setback Curb Inlet.
Proposed 12" Relocation Water Main per Separate Plans (By Others).
Gas Meter (See M.E.P. Plans for Detail)
See M.E.P. Plans for Mechanical Yard Detail
Sta. 5+16.67, 112.00' Lt., Loop Dr. Install New Fire hydrant Assembly. See City Detail W-10.
Sta. 7+36.31, 31.00' Rt., Loop Dr. Construct 5'x3' Non-Setback Curb Inlet.
Electrical Transformer
See M.E.P. Plans for Electrical Transformer Detail.
Existing Water Main Isolation Valves.
Screen Wall (By Others)
Sta. 7+76.38, 18.29' Rt. Loop Dr. Connect to Proposed 12" DIP Water Main per Separate Plans (By Others). See Water Connection Detail A.
Existing 12" Water Main to be Abandoned per Separate Plans (By Others).
Sta. 7+50.39, 80.15' Lt., Loop Dr. Install New 6" Restrained Joint 45° Bend.
Proposed Hospital Building F.F. 1006.00
Sta. 8+11.65, 38.00' Lt., Loop Dr. Construct 5'x3' Non-Setback.
Sta. 8+36.78, 36.88' Lt., Loop Dr. Install New 8" Restrained Joint 45° Bend.
10" Roof Drain See MEP Plans
Sta. 8+54.78, 34.54' Lt. Loop Dr. Construct Combination Vault for Sensus 3" SRH Compound Water Meter and MODNR Approved 10" Double Check Detector Check Assembly. See City Detail W-15.
Install New Restrained Joint 8" DIP Water Main with Polywrap and Marker Tape.
Install New Restrained Joint 6" DIP Water Main with Polywrap and Marker Tape.
Install New Restrained Joint 3" DIP Water Main with Polywrap and Marker Tape.
Sta. 9+03.19, 80.15' Lt., Loop Dr. Install New 6" Restrained Joint 45° Bend.
Sta. 9+10.64, 36.88' Lt., Loop Dr. Install New 3" Restrained Joint 45° Bend.
To 29
SCALE : 1 INCH = 30 FEET

Roof Drain Notes:

Refer to Mechanical Plans for Roof Water Drain at Building.

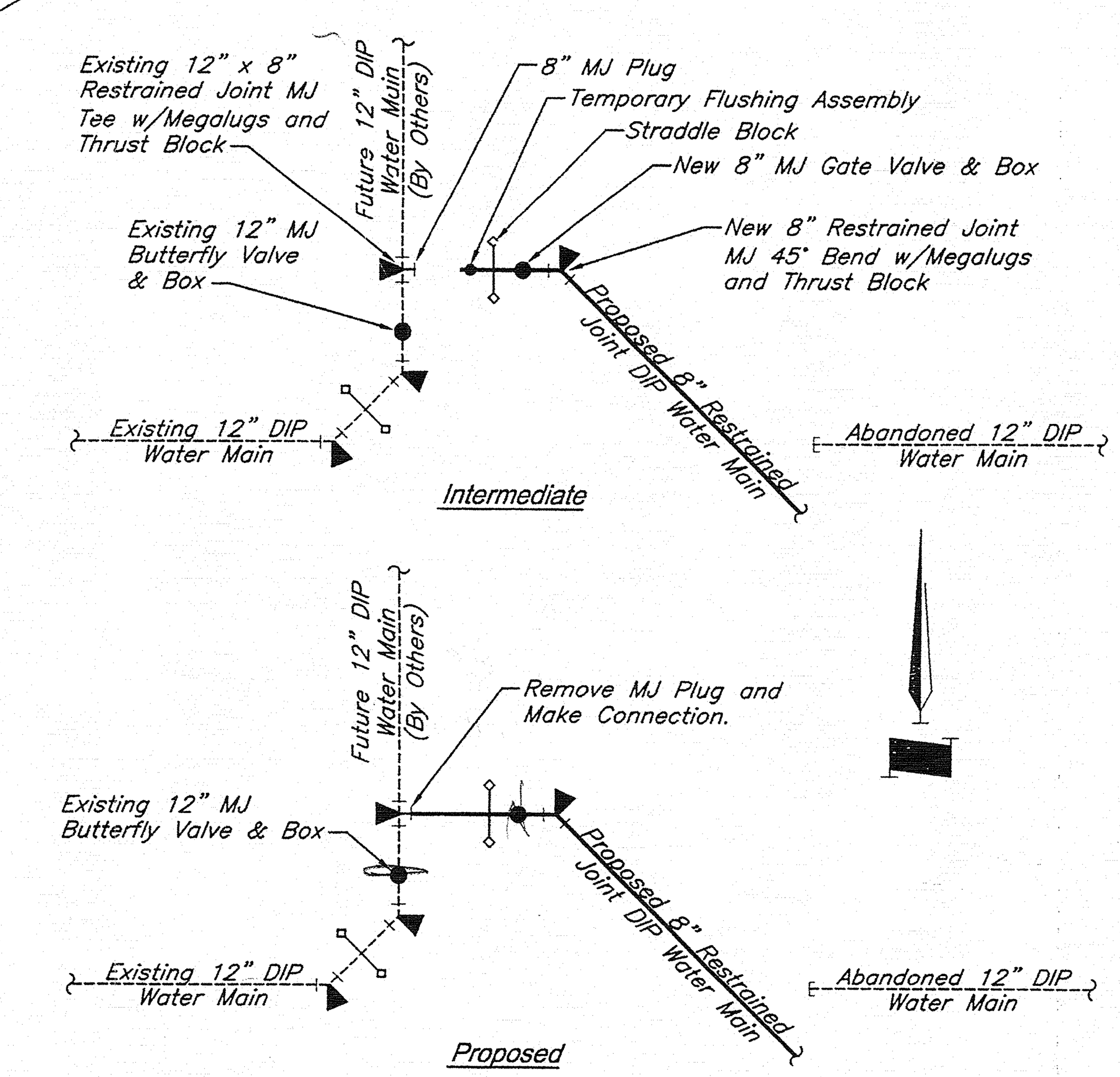
30 — Install 12" Cleanout – Cast Iron. Connect to Building Plumbing. Flowline = 999.26. Install 69.72 L.F. 12" HDPE @ 1.00% to 31

31 — Install 12" Cleanout – Cast Iron. Flowline = 998.56. Install 65.95 L.F. 12" HDPE @ 1.00% to 32

32 — Connect 12" Roofdrain to Curb Inlet (22). Flowline = 997.50

Proposed Utility Legend

—DW—	Domestic Water
—FPW—	Fire Protection Water
	Storm Sewer Line
	Sanitary Sewer
	Proposed Fire Hydrant
	Water Valve
	Roof drain System

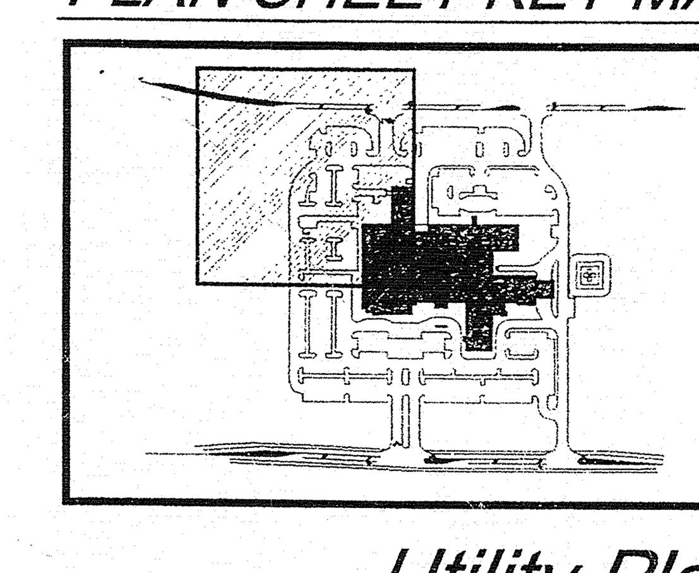


Existing 12" x 8" Restrained Joint MJ Tee w/Megalugs and Thrust Block
Future 12" DIP Water Main (By Others)
8" MJ Plug
Temporary Flushing Assembly
Straddle Block
New 8" MJ Gate Valve & Box
Existing 12" MJ Butterfly Valve & Box
New 8" Restrained Joint MJ 45° Bend w/Megalugs and Thrust Block
Proposed 8" Restrained Joint DIP Water Main
Existing 12" DIP Water Main
Abandoned 12" DIP Water Main
Intermediate
Remove MJ Plug and Make Connection.
Existing 12" MJ Butterfly Valve & Box
Proposed

Water Connection Detail A

N.T.S.

PLAN SHEET KEY MAP



Utility Plan

GBA GEORGE BUTLER ASSOCIATES, INC.
Engineers • Architects
Kansas • Missouri • Illinois
One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219-9745
(913) 492-0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

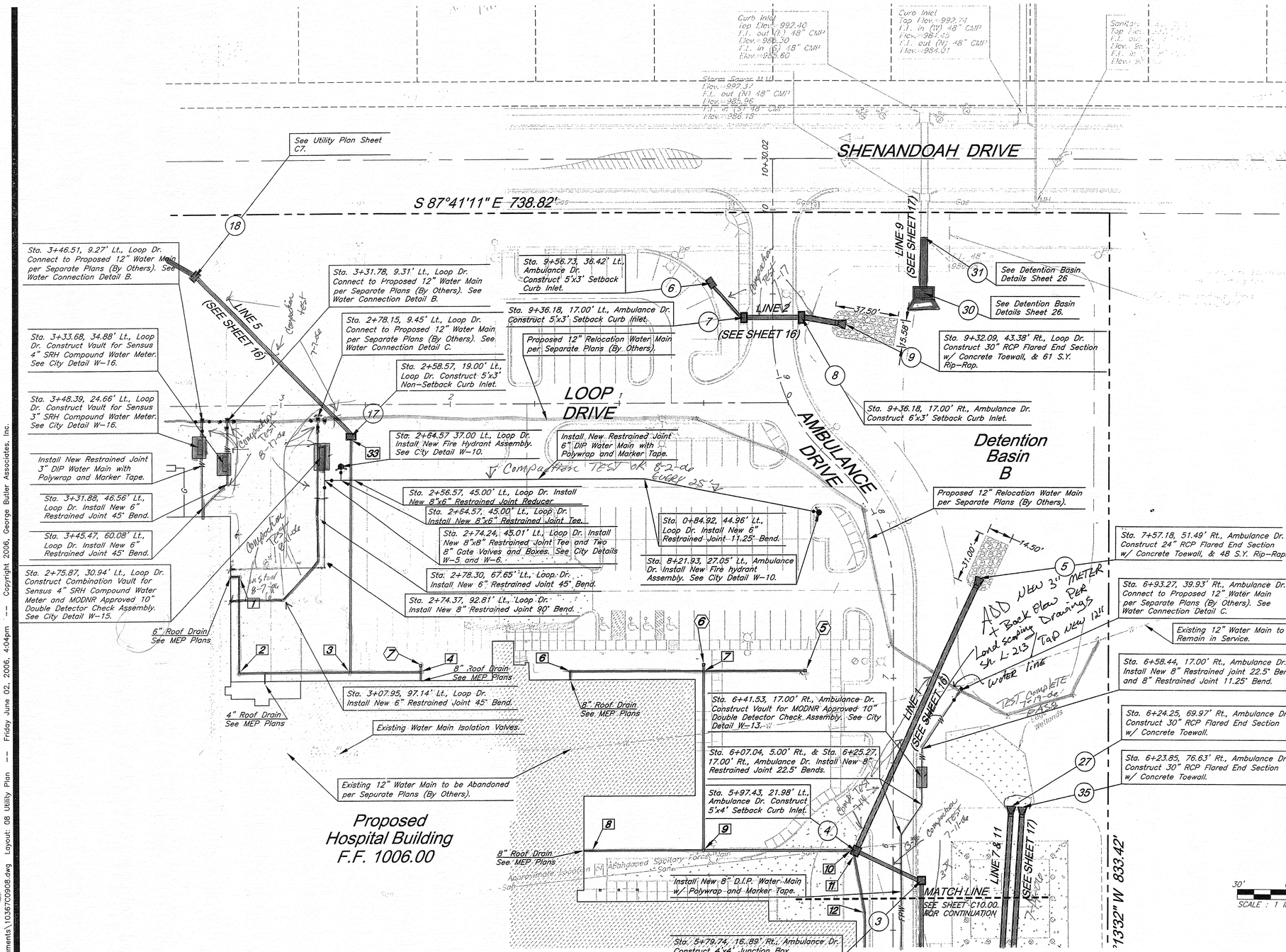
LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI — BRADLEY D. BURTON — NUMBER E-26862 — REGISTERED PROFESSIONAL ENGINEER

PROJECT NUMBER
10367.00
DATE
First Issue as: ASI #2 – 06/02/06

DESIGNED
H.T.R. / J.W.M.
DRAWN
B.I.B.
REVIEWED
B.D.B.
SHEET TITLE
Site Utility Plan

SHEET NUMBER
7 of 29



Roof Drain Notes:

Refer to Mechanical Plans for Roof Water Drain at Building.

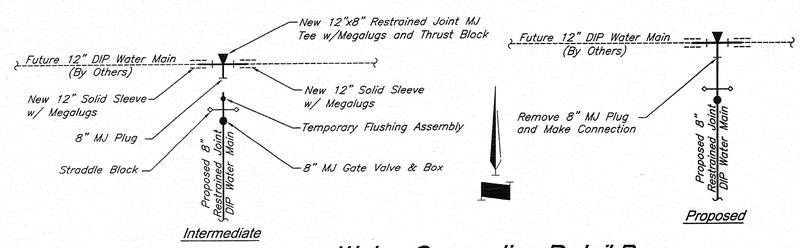
1. Install 6" Cleanout – Cast Iron Connect to Building Plumbing Flowline = 998.94 Install 57.90 L.F. 8" HDPE @ 1.00% to 2
2. Install 8" Cleanout – Cast Iron Flowline = 998.33 Install 15.18 L.F. 8" HDPE @ 1.0% to 3
3. Install 8" Cleanout – Cast Iron Connect to Building Plumbing Flowline = 998.18 Install 50.65 L.F. 8" HDPE @ 1.00% to 4
4. Install 10" Cleanout – Cast Iron Flowline = 997.67 Install 41.52 L.F. 8" HDPE @ 2.00 % to 5 Install 141.00 L.F. 10" HDPE @ 1.50 % to 33
33. Connect 10" Roof Drain to Curb Inlet (17) Flowline = 995.56
5. Install 8" Cleanout – Buried Connect to Building Plumbing Flowline = 998.50
6. Install 8 " Cleanout – Cast Iron Connect to Building Plumbing Flowline = 998.94 Install 79.13 L.F. 8" HDPE @ 1.00 % to 7
7. Install 10" Cleanout – Cast Iron Flowline = 998.14 Install 106.48 L.F. 10" HDPE @ 1.50% to 9
8. Install 8 " Cleanout – Cast Iron Connect to Building Plumbing Flowline = 1000.51 Install 66.00 L.F. 8" HDPE @ 6.00 % to 9
9. Install 12" Cleanout – Cast Iron Flowline = 996.55 Install 90.52 L.F. 12" HDPE @ 1.30% to 10
10. Connect 12" Roofdrain to Curb Inlet (4) Flowline = 995.37
11. Connect 12" Roofdrain to Curb Inlet (4) Flowline = 995.37

Yard Drain Notes:

5. Install 15" Nyloplast Inline Drain with Standard Lock Down Grate. Top Elev. = 1001.50 F.L. Out 8" (W)=998.75 Install 60.07 L.F. of 8" HDPE @ 1.00% to Roof Drain Clean Out 7
6. Install 15" Nyloplast Inline Drain with Standard Lock Down Grate. Top Elev. = 1003.33 F.L. Out 8" (S)=998.20 Install 3.67 L.F. of 8" HDPE @ 1.60% to Roof Drain Clean Out 7
7. Install 15" Nyloplast Inline Drain with Standard Lock Down Grate. Top Elev. = 1004.00 F.L. Out 8" (S)=998.65 Install 3.77 L.F. of 8" HDPE @ 4.00% to Roof Drain Clean Out 4

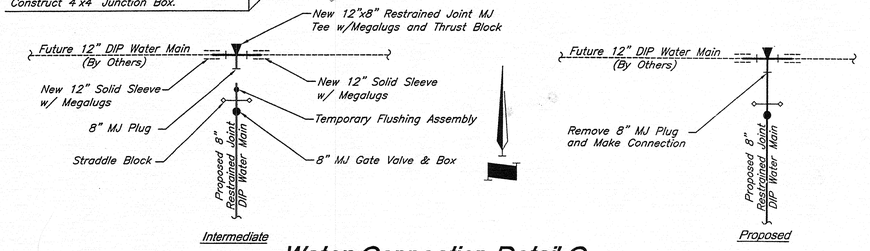
Proposed Utility Legend

- DW — Domestic Water
- FPW — Fire Protection Water
- Storm Sewer Line
- Sanitary Sewer
- Proposed Fire Hydrant
- Water Valve
- Roof Drain System



Water Connection Detail B

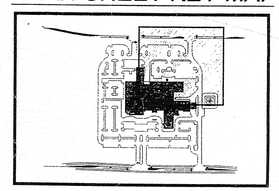
N.T.S.



Water Connection Detail C

N.T.S.

PLAN SHEET KEY MAP



Utility Plan

GEORGE BUTLER ASSOCIATES, INC.
Engineers • Architects
Kansas • Missouri • Illinois
One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219-9745
(913) 492-0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

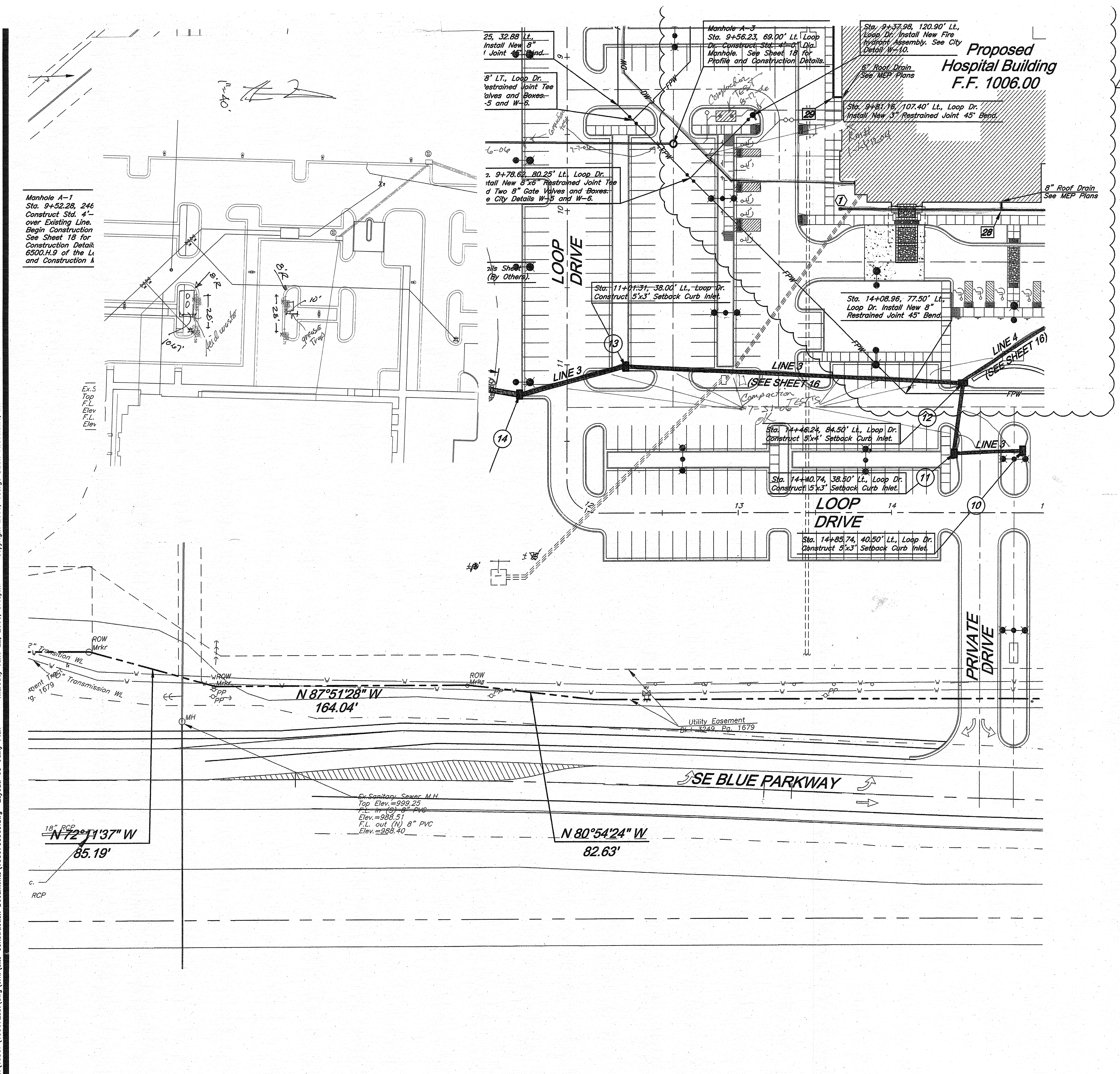
STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25866
REGISTERED PROFESSIONAL ENGINEER
6/6/06

PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 – 06/02/06

DESIGNED
H.T.R. / J.W.M.
DRAWN
B.I.B.
REVIEWED
B.D.B.
SHEET TITLE
Site Utility Plan

SHEET NUMBER
8 of 29


Proposed Hospital Building
F.F. 1006.00
Manhole A-3
Sta. 9+56.23, 69.00' Lt. Loop Dr. Construct Std. 4'-0" Dia. Manhole. See Sheet 18 for Profile and Construction Details.
Sta. 9+37.98, 120.90' Lt., Loop Dr. Install New Fire Hydrant Assembly. See City Detail W-10.
6" Roof Drain See MEP Plans
Sta. 9+81.16, 107.40' Lt., Loop Dr. Install New 3" Restrained Joint 45° Bend.
8" Roof Drain See MEP Plans
Manhole A-1
Sta. 9+52.28, 246
Construct Std. 4'-
over Existing Line.
Begin Construction
See Sheet 18 for
Construction Detail
6500.H.9 of the L
and Construction I
Sta. 9+78.62, 80.25' Lt., Loop Dr. Install New 8"x6" Restrained Joint Tee and Two 8" Gate Valves and Boxes. See City Details W-5 and W-6.
LOOP DRIVE
Sta. 11+01.31, 38.00' Lt., Loop Dr. Construct 5'x3' Setback Curb Inlet.
Sta. 14+08.96, 77.50' Lt., Loop Dr. Install New 8" Restrained Joint 45° Bend.
LINE 3
(SEE SHEET 16)
LINE 4
(SEE SHEET 16)
Sta. 14+46.24, 84.50' Lt., Loop Dr. Construct 5'x4' Setback Curb Inlet.
Sta. 14+40.74, 38.50' Lt., Loop Dr. Construct 5'x3' Setback Curb Inlet.
Sta. 14+85.74, 40.50' Lt., Loop Dr. Construct 5'x3' Setback Curb Inlet.
LOOP DRIVE
PRIVATE DRIVE
ROW Mrkr
N 87°51'28" W
164.04'
Utility Easement
Bk. 3249, Pg. 1679
SE BLUE PARKWAY
Ex. Sanitary Sewer M.H.
Top Elev.=999.25
Elev.=988.51
F.L. out (N) 8" PVC
Elev.=988.40
N 72°11'37" W
85.19'
N 80°54'24" W
82.63'
30' 0' 30' 60'
SCALE : 1 INCH = 30 FEET

Roof Drain Notes:

Refer to Mechanical Plans for Roof Water Drain at Building.

28 Install 8" Cleanout – Cast Iron
Connect to Building Plumbing
Flowline = 1001.59
Install 38.99 L.F. 8" HDPE @ 1.00% to 26

29 Install 6" Cleanout – Cast Iron
Connect to Building Plumbing
Flowline = 1000.25
Install 98.93 L.F. 6" HDPE @ 1.00% to 30

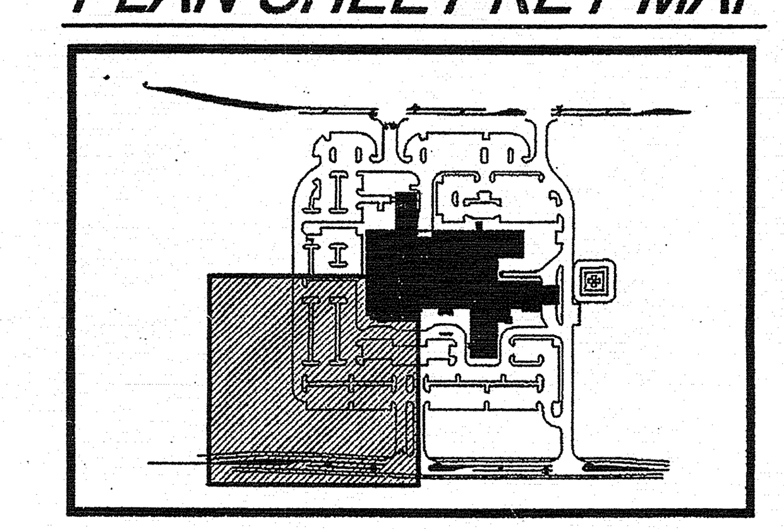
Yard Drain Notes:

1 Install 15" Nyloplast Inline Drain with Standard Lock Down Grate.
Top Elev. = 1004.70
F.L. Out 8" (E)=1002.65
Install 105.56 L.F. of 8" HDPE @ 1.00% to Roof Drain Clean-out 28

Proposed Utility Legend

- DW — Domestic Water
- FPW — Fire Protection Water
- Storm Sewer Line
- Sanitary Sewer
- Propsed Fire Hydrant
- Water Valve
- Roof Drain System

PLAN SHEET KEY MAP



Utility Plan

GBA
GEORGE BUTLER ASSOCIATES, INC.
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9801 Renner Boulevard
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Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25862
REGISTERED PROFESSIONAL ENGINEER

PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 – 06/02/06
Revised: ASI #04 – 06/23/06

DESIGNED H.T.R. / J.W.M.
DRAWN B.I.B.
REVIEWED B.D.B.
SHEET TITLE
Site Utility Plan

SHEET NUMBER
9 of 29

Manhole A–1
Sta. 9+52.28, 246.27' Rt. Loop Dr.
Construct Std. 4'–0" Dia. Manhole over Existing Line.
Begin Construction Private Line A.
See Sheet 18 for Profile and Construction Details. Refer to Section 6500.H.9 of the Lee Summit Design and Construction Manual.

Manhole A–2
Sta. 9+54.28, 86.29' Rt. Loop Dr.
Construct Std. 4'–0" Dia. Manhole.
See Sheet 18 for Profile and Construction Details.

Private Sanitary Sewer Line A

Sta.9+31.25, 32.88 Lt., Loop Dr. Install New 8" Restrained Joint 45° Bend.

Sta. 9+40.85, 42.48' LT., Loop Dr. Install New 8"x6" Restrained Joint Tee and Two 8" Gate Valves and Boxes. See City Details W–5 and W–6.

Manhole A–3
Sta. 9+56.23, 69.00' Lt. Loop Dr. Construct Std. 4'–0" Dia. Manhole. See Sheet 18 for Profile and Construction Details.

Sta. 9+37.98, 120.90' Lt., Loop Dr. Install New Fire hydrant Assembly. See City Detail W–10.

Proposed Hospital Building F.F. 1006.00

6" Roof Drain See MEP Plans

Sta. 9+81.16, 107.40' Lt., Loop Dr. Install New 3" Restrained Joint 45° Bend.

Sta. 9+83.74, 140.87' Lt., Loop Dr. Install New 8"x8" Restrained Joint Tee and Two 8" Gate Valves. See City Details W–5 and W–6.

Sta. 9+78.62, 80.25' Lt. Loop Dr. Install New 8"x6" Restrained Joint Tee and Two 8" Gate Valves and Boxes. See City Details W–5 and W–6.

Sta. 9+83.74, 85.37' Lt., Loop Dr. Install New 8" Restrained Joint 45° Bend.

See Detention Basin Details Sheet 25. per Separate Plans (By Others).

See Detention Basin Details Sheet 25. per Separate Plans (By Others).

LINE 8 (SEE SHEET17) per Separate Plans (By Others)

Detention Basin A

LOOP DRIVE

Sta. 11+01.31, 38.00' Lt., Loop Dr. Construct 5'x3' Setback Curb Inlet.

Sta. 13+28.89, 131.13' Lt., Loop Dr. Install New 8" Restrained Joint 45° Bend.

Sta. 13+82.51, 77.50' Lt., Loop Dr. Install New 8" Restrained Joint 45° Bend.

LINE 4 (SEE SHEET 16)

LINE 3 (SEE SHEET 16)

37.50'

15.58'

Sta. 11+15.54, 54.32 Rt., Loop Dr. Construct 30" R.C.P. Flared End Section w/ Concrete Toewall, & 61 S.Y. Rip–Rap.

Sta. 11+19.31, 31.03' Rt., Loop Dr. Construct 5'x3' Setback Curb Inlet.

Test Holes

Test hole

Sta. 14+46.24, 84.50' Lt., Loop Dr. Construct 5'x3' Setback Curb Inlet.

Sta. 14+40.74, 38.50' Lt., Loop Dr. Construct 5'x3' Setback Curb Inlet.

WET Area

Sta. 14+85.74, 40.50' Lt., Loop Dr. Construct 5'x3' Setback Curb Inlet.

This Area stays WET with surface wt AFTER Storm Line 3 was installed WET Area Dried up

Stewart Ley said we do not Needs under drain now 8-17-06

Temp Rd.

PRIVATE DRIVE

ROW Marker

N 87°51'28" W
164.04'

Utility Easement
Bk. 3548 Pg. 1679

SE BLUE PARKWAY

N 72°11'37" W
85.19'

N 80°54'24" W
82.63'

SHEET Revised See ASI #4

Roof Drain Notes:

Refer to Mechanical Plans for Roof Water Drain at Building.

28 Install 8" Cleanout – Cast Iron
Connect to Building Plumbing
Flowline = 1001.59
Install 38.99 L.F. 8" HDPE @ 1.00% to 26

29 Install 6" Cleanout – Cast Iron
Connect to Building Plumbing
Flowline = 1000.25
Install 98.93 L.F. 6" HDPE @ 1.00% to 30

Yard Drain Notes:

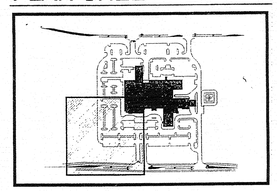
7 Install 15" Nyloplast Inline Drain with Standard Lock Down Grate.
Top Elev. = 1004.70
F.L. Out 8"(E)=1002.65
Install 105.56 L.F. of 8" HDPE @ 1.00% to Roof Drain Clean–out 28

Proposed Utility Legend

—DW— Domestic Water
—FPW— Fire Protection Water
Storm Sewer Line
Sanitary Sewer
Propsed Fire Hydrant
Water Valve
Roof Drain System

30' 0' 30' 60'
SCALE : 1 INCH = 30 FEET

PLAN SHEET KEY MAP



Utility Plan

GEORGE BUTLER ASSOCIATES, INC.
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One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219–9745
(913) 492–0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL–2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E–25862
REGISTERED PROFESSIONAL ENGINEER

PROJECT NUMBER
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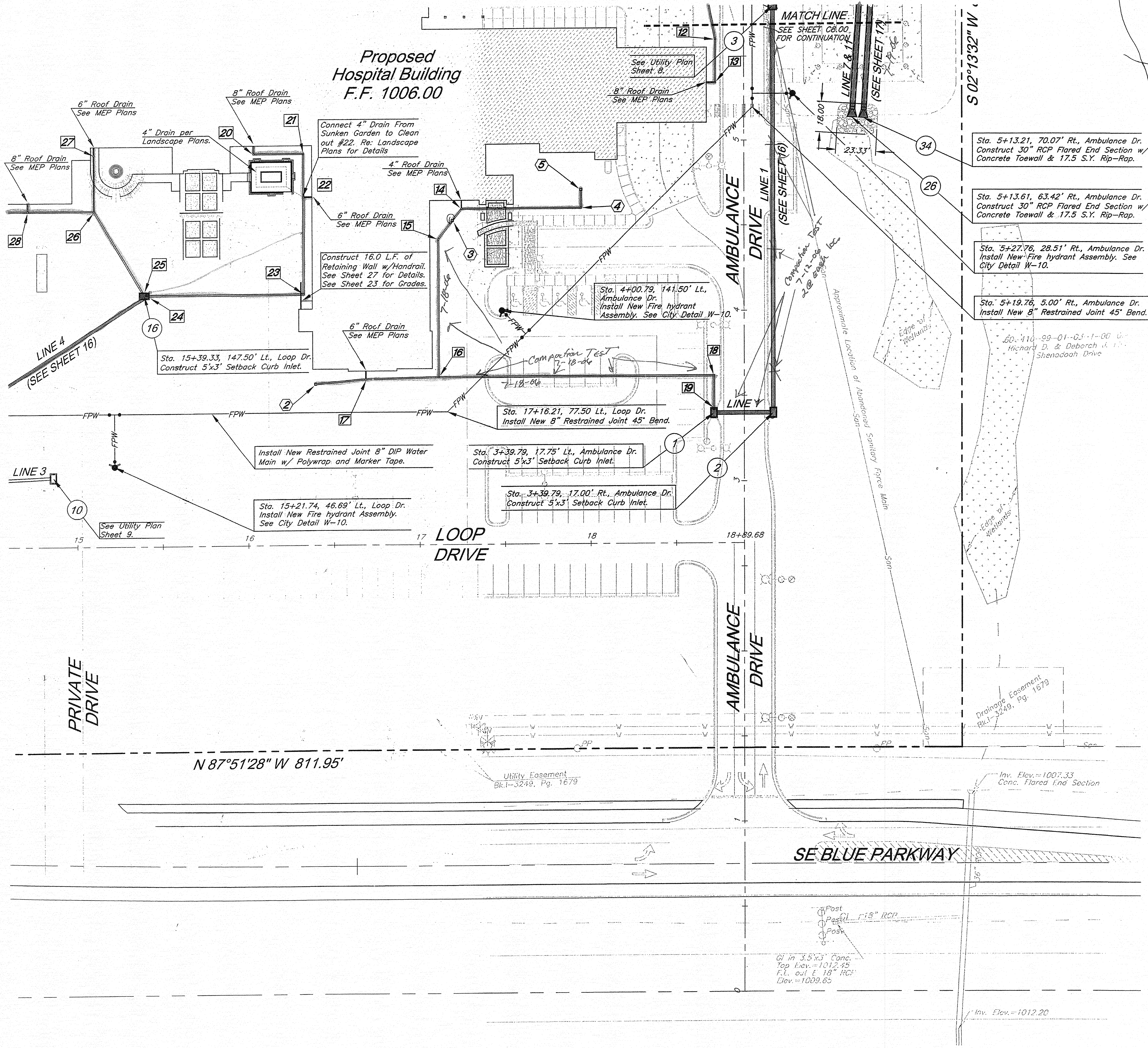
DESIGNED
H.T.R. / J.W.M.
DRAWN
B.I.B.
REVIEWED
B.D.B.
SHEET TITLE
Site Utility Plan

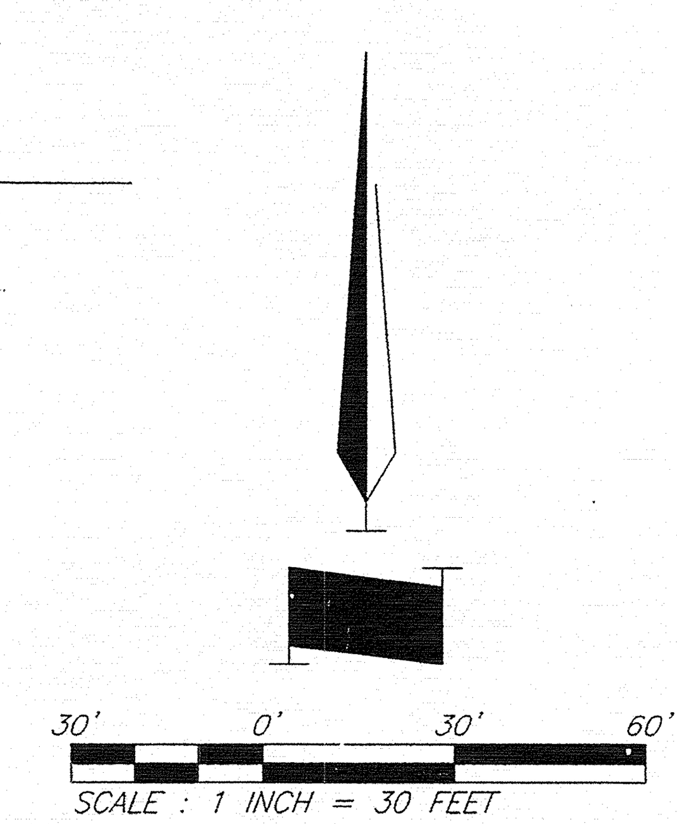
SHEET NUMBER
9 of 29

448- 474-8600



Proposed Utility Legend

—DW—	Domestic Water
—FPW—	Fire Protection Water
═□═	Storm Sewer Line
---○---	Sanitary Sewer
●	Propsed Fire Hydrant
●	Water Valve
····	Roof Drain System



Roof Drain Notes:

Refer to Mechanical Plans for Roof Water Drain at Building.

12 Install 8" Cleanout – Cast Iron
Flowline = 995.74
Install 37.35 L.F. 8" HDPE @ 1.00% to 11

13 Install 8" Cleanout – Cast Iron
Connect to Building Plumbing
Flowline = 996.00
Install 25.93 L.F. 8" HDPE @ 1.0% to 12

14 Install 10" Cleanout – Cast Iron
Connect to Building Plumbing
Flowline = 1001.58
Install 8.78 L.F. 8" HDPE @ 0.80% to ⟨3⟩

15 Install 8" Cleanout – Cast Iron
Flowline = 1001.41
Install 81.24 L.F. 8" HDPE @ 0.80 % to 16
Install 13.60 L.F. 8" HDPE @ 0.80 % to ⟨3⟩

16 Install 10" Cleanout – Cast Iron
Flowline = 1000.76
Install 160.75 L.F. of 10" HDPE @0.80% to 18

17 Install 8" Cleanout – Buried
Connect to Building Plumbing
Flowline = 1001.40
Install 42.59 L.F. 8" HDPE @ 1.50% to 16

18 Install 10 " Cleanout – Cast Iron
Flowline = 999.47
Install 22.00 L.F. 10" HDPE @ 1.00 % to 19

19 Connect 10" Roofdrain to Curb Inlet (1)
Flowline = 999.25

20 Install 8" Cleanout – Buried
Connect to Building Plumbing
Flowline = 1002.68
Install 29.01 L.F. 8" HDPE @ 1.00% to 21

21 Install 8" Cleanout – Buried
Flowline = 1002.39
Install 25.46 L.F. 8" HDPE @ 1.0% to 22

22 Install 10" Cleanout – Buried
Connect to Building Plumbing
Flowline = 1002.13
Install 57.04 L.F. 10" HDPE @ 1.0% to 23

23 Install 10" Cleanout – Cast Iron
Flowline = 1001.56
Install 93.18 L.F. 8" HDPE @ 1.00% to 24

24 Connect 10" Roofdrain to Curb Inlet 16
Flowline = 1000.63

25 Connect 10" Roofdrain to Curb Inlet 16
Flowline = 1000.63

26 Install 10 " Cleanout – Cast Iron
Flowline = 1001.21
Install 57.50 L.F. 10" HDPE @ 1.00 % to 25

27 Install 6 " Cleanout – Cast Iron
Connect to Building Plumbing
Flowline = 1001.94
Install 33.00 L.F. 6" HDPE @ 2.20 % to 26

Yard Drain Notes:

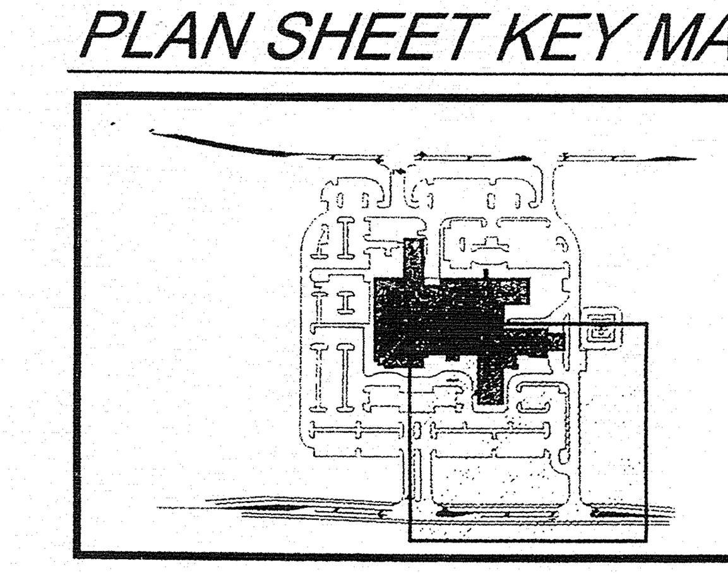
⟨2⟩ Install 15" Nyloplast Inline Drain with
Standard Lock Down Grate.
Top Elev. = 1004.50
F.L. Out 8" (E)=1001.84
Install 29.40 L.F. of 8" HDPE @ 1.50%
to Roof Drain Clean Out 17

⟨3⟩ Install 15" Nyloplast Catch Basin with
Standard Lock Down Grate.
Top Elev. = 1005.00
F.L. In 8" (NE)=1001.51
F.L. Out 8" (SE) = 1001.51

⟨4⟩ Install 8" Cleanout – Cast Iron
F.L. = 1002.14
Install 69.86 L.F. of 8" HDPE @ 0.80% to 14

⟨5⟩ Install 15" Nyloplast Inline Drain with
Standard Lock Down Grate.
Top Elev. = 1004.10
F.L. Out 8" (S)=1002.23
Install 10.85 L.F. of 8" HDPE @ 0.80% to ⟨4⟩

PLAN SHEET KEY MAP



Dave Herns
816-215-1976

Utility Plan

GEORGE BUTLER ASSOCIATES, INC.
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Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25862
REGISTERED PROFESSIONAL ENGINEER
6/2/06

PROJECT NUMBER
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H.T.R. / J.W.M.
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SHEET TITLE
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SHEET NUMBER
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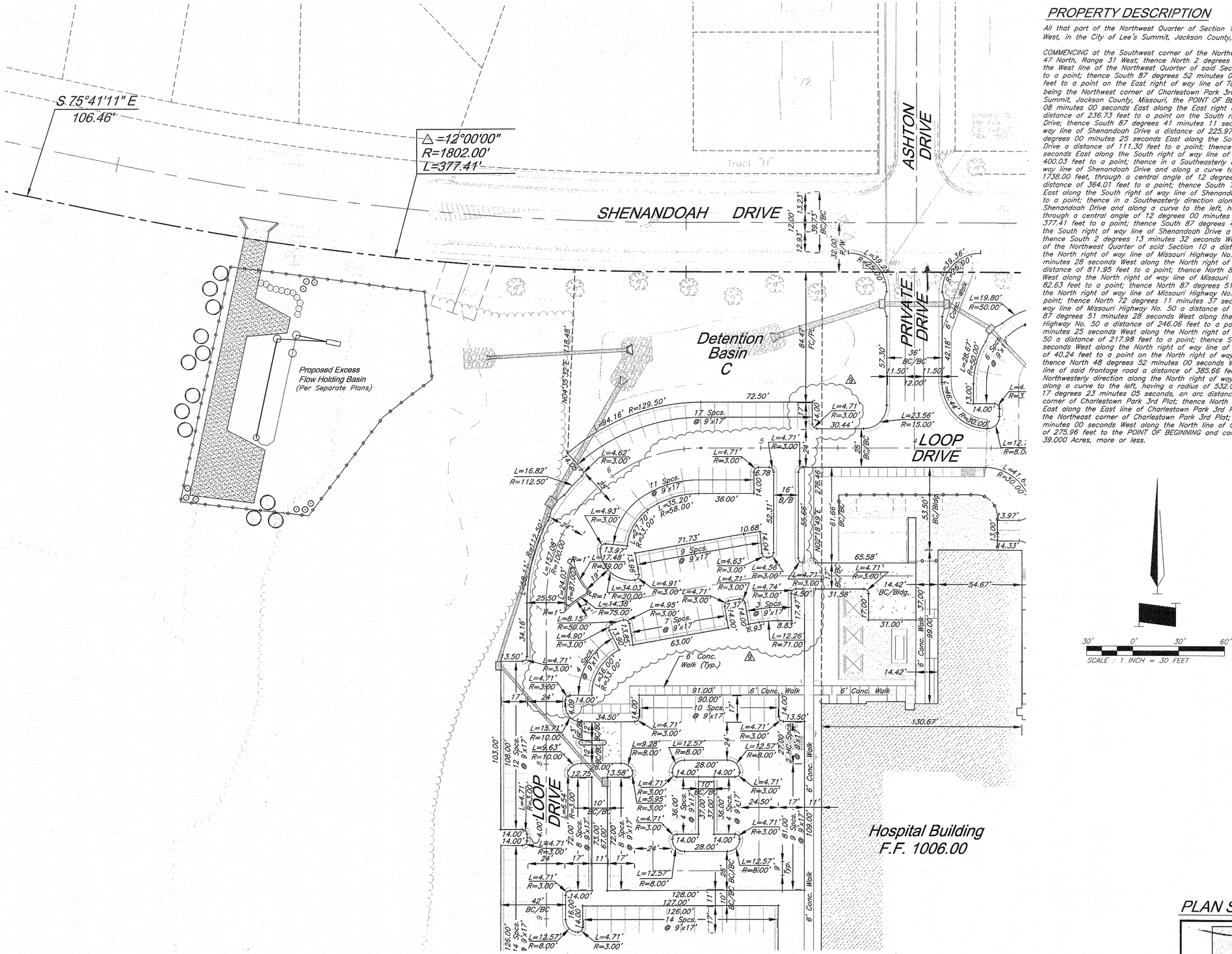
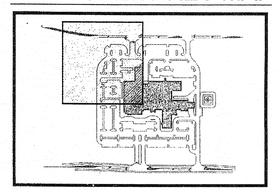


PROPERTY DESCRIPTION

All that part of the Northwest Quarter of Section 10, Township 47 North, Range 31 West, in the City of Lee's Summit, Jackson County, Missouri, described as follows:

COMMENCING at the Southwest corner of the Northwest Quarter of Section 10, Township 47 North, Range 31 West; thence North 2 degrees 08 minutes 13 seconds East along the West line of the Northwest Quarter of said Section 10 a distance of 827.10 feet to a point; thence South 87 degrees 52 minutes 00 seconds East a distance of 74.22 feet to a point on the East right of way line of Todd George Road, said point also being the Northwest corner of Charlestown Park 3rd Plat, a subdivision in Lee's Summit, Jackson County, Missouri, the POINT OF BEGINNING; thence North 2 degrees 08 minutes 00 seconds East along the East right of way of Todd George Road a distance of 236.73 feet to a point on the South right of way line of Shenandoah Drive; thence South 87 degrees 41 minutes 11 seconds East along the South right of way line of Shenandoah Drive a distance of 225.97 feet to a point; thence North 83 degrees 00 minutes 25 seconds East along the South right of way line of Shenandoah Drive a distance of 111.30 feet to a point; thence South 87 degrees 41 minutes 11 seconds East along the South right of way line of Shenandoah Drive a distance of 400.03 feet to a point; thence in a Southeasterly direction along the South right of way line of Shenandoah Drive and along a curve to the right, having a radius of 1738.00 feet, through a central angle of 12 degrees 00 minutes 00 seconds, an arc distance of 364.01 feet to a point; thence South 75 degrees 41 minutes 11 seconds East along the South right of way line of Shenandoah Drive a distance of 106.46 feet to a point; thence in a Southeasterly direction along the South right of way line of Shenandoah Drive and along a curve to the left, having a radius of 1802.00 feet, through a central angle of 12 degrees 00 minutes 00 seconds, an arc distance of 377.41 feet to a point; thence South 87 degrees 41 minutes 11 seconds East along the South right of way line of Shenandoah Drive a distance of 738.82 feet to a point; thence South 2 degrees 13 minutes 32 seconds West and parallel with the East line of the Northwest Quarter of said Section 10 a distance of 833.42 feet to a point on the North right of way line of Missouri Highway No. 50; thence North 87 degrees 51 minutes 28 seconds West along the North right of way line of Missouri No. 50 a distance of 811.95 feet to a point; thence North 80 degrees 54 minutes 24 seconds West along the North right of way line of Missouri Highway No. 50 a distance of 82.63 feet to a point; thence North 87 degrees 51 minutes 28 seconds West along the North right of way line of Missouri Highway No. 50 a distance of 164.04 feet to a point; thence North 72 degrees 11 minutes 37 seconds West along the North right of way line of Missouri Highway No. 50 a distance of 85.19 feet to a point; thence North 87 degrees 51 minutes 28 seconds West along the North right of way line of Missouri Highway No. 50 a distance of 246.06 feet to a point; thence North 56 degrees 56 minutes 25 seconds West along the North right of way line of Missouri Highway No. 50 a distance of 217.98 feet to a point; thence South 41 degrees 38 minutes 53 seconds West along the North right of way line of Missouri Highway No. 50 a distance of 40.24 feet to a point on the North right of way line of an existing frontage road; thence North 48 degrees 52 minutes 00 seconds West along the North right of way line of said frontage road a distance of 385.66 feet to a point; thence in a Northwesterly direction along the North right of way line of said frontage road and along a curve to the left, having a radius of 532.00 feet, through a central angle of 17 degrees 23 minutes 05 seconds, an arc distance of 161.42 feet to the Southeast corner of Charlestown Park 3rd Plat; thence North 2 degrees 08 minutes 00 seconds East along the East line of Charlestown Park 3rd Plat a distance of 247.41 feet to the Northeast corner of Charlestown Park 3rd Plat; thence North 87 degrees 52 minutes 00 seconds West along the North line of Charlestown Park 3rd Plat a distance of 275.96 feet to the POINT OF BEGINNING and containing 1,698,840 Square Feet or 39.000 Acres, more or less.

PLAN SHEET KEY MAP



Dimension Plan

GBA
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REPLACEMENT HOSPITAL

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Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

Site Construction Plans for:

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25602
REGISTERED PROFESSIONAL ENGINEER
10/13/06

PROJECT NUMBER
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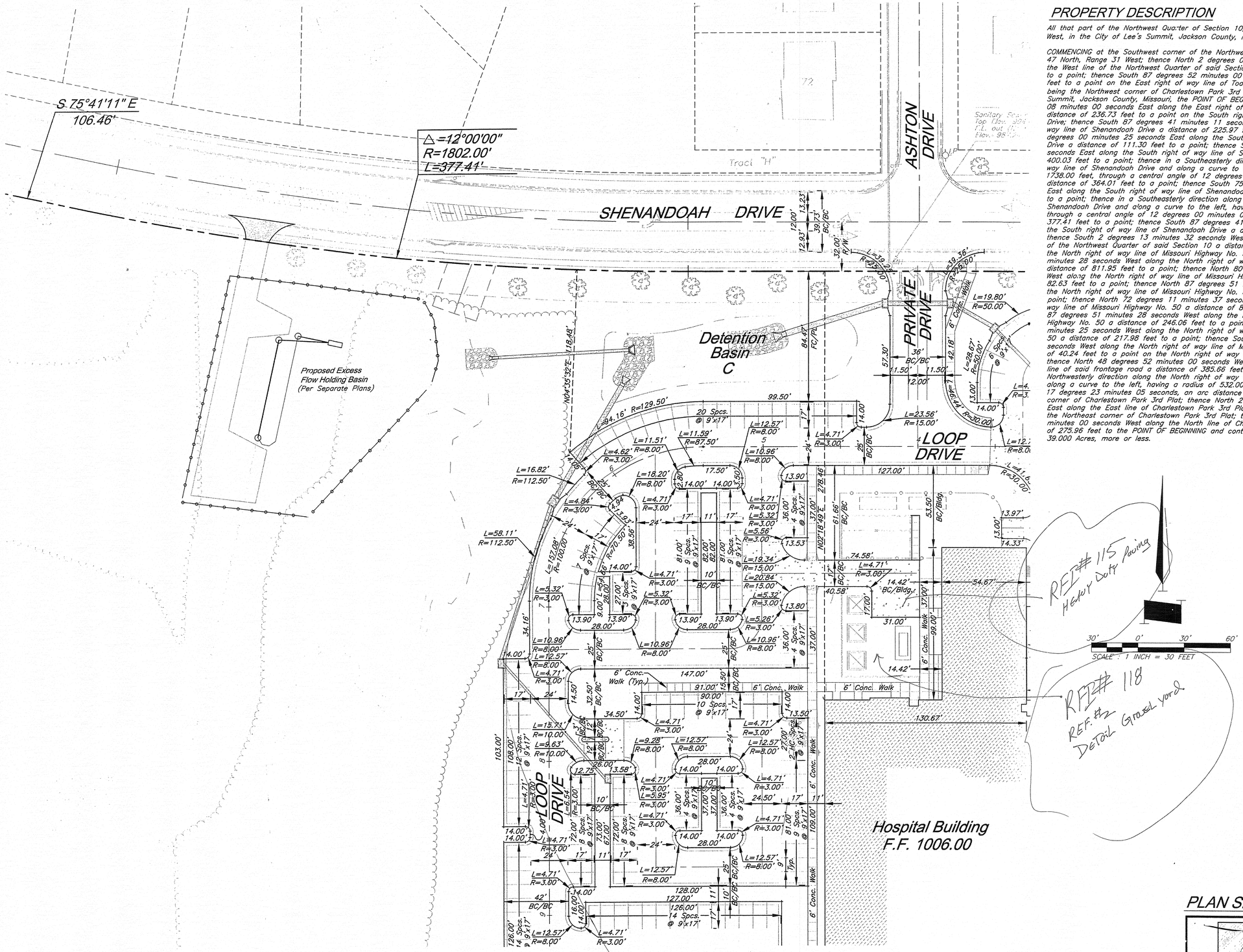
DATE
First Issue as: ASI #2 – 06/02/06
ASI #7 – 10/20/06

DESIGNED
H.T.R. / J.W.M.
DRAWN
B.I.B.
REVIEWED
B.D.B.
SHEET TITLE
Site Dimension Plan

SHEET NUMBER
11 of 29

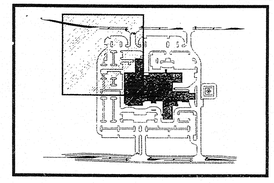


PROPERTY DESCRIPTION

All that part of the Northwest Quarter of Section 10, Township 47 North, Range 31 West, in the City of Lee's Summit, Jackson County, Missouri, described as follows:

COMMENCING at the Southwest corner of the Northwest Quarter of Section 10, Township 47 North, Range 31 West; thence North 2 degrees 08 minutes 13 seconds East along the West line of the Northwest Quarter of said Section 10 a distance of 827.10 feet to a point; thence South 87 degrees 52 minutes 00 seconds East a distance of 74.22 feet to a point on the East right of way line of Todd George Road, said point also being the Northwest corner of Charlestown Park 3rd Plat, a subdivision in Lee's Summit, Jackson County, Missouri, the POINT OF BEGINNING; thence North 2 degrees 08 minutes 00 seconds East along the East right of way of Todd George Road a distance of 236.73 feet to a point on the South right of way line of Shenandoah Drive; thence South 87 degrees 41 minutes 11 seconds East along the South right of way line of Shenandoah Drive a distance of 225.97 feet to a point; thence North 83 degrees 00 minutes 25 seconds East along the South right of way line of Shenandoah Drive a distance of 111.30 feet to a point; thence South 87 degrees 41 minutes 11 seconds East along the South right of way line of Shenandoah Drive a distance of 400.03 feet to a point; thence in a Southeasterly direction along the South right of way line of Shenandoah Drive and along a curve to the right, having a radius of 1738.00 feet, through a central angle of 12 degrees 00 minutes 00 seconds, an arc distance of 364.01 feet to a point; thence South 75 degrees 41 minutes 11 seconds East along the South right of way line of Shenandoah Drive a distance of 106.46 feet to a point; thence in a Southeasterly direction along the South right of way line of Shenandoah Drive and along a curve to the left, having a radius of 1802.00 feet, through a central angle of 12 degrees 00 minutes 00 seconds, an arc distance of 377.41 feet to a point; thence South 87 degrees 41 minutes 11 seconds East along the South right of way line of Shenandoah Drive a distance of 738.82 feet to a point; thence South 2 degrees 13 minutes 32 seconds West and parallel with the East line of the Northwest Quarter of said Section 10 a distance of 833.42 feet to a point on the North right of way line of Missouri Highway No. 50; thence North 87 degrees 51 minutes 28 seconds West along the North right of way line of Missouri No. 50 a distance of 811.95 feet to a point; thence North 80 degrees 54 minutes 24 seconds West along the North right of way line of Missouri Highway No. 50 a distance of 82.63 feet to a point; thence North 87 degrees 51 minutes 28 seconds West along the North right of way line of Missouri Highway No. 50 a distance of 164.04 feet to a point; thence North 72 degrees 11 minutes 37 seconds West along the North right of way line of Missouri Highway No. 50 a distance of 85.19 feet to a point; thence North 87 degrees 51 minutes 28 seconds West along the North right of way line of Missouri Highway No. 50 a distance of 246.06 feet to a point; thence North 56 degrees 56 minutes 25 seconds West along the North right of way line of Missouri Highway No. 50 a distance of 217.98 feet to a point; thence South 41 degrees 38 minutes 53 seconds West along the North right of way line of Missouri Highway No. 50 a distance of 40.24 feet to a point on the North right of way line of an existing frontage road; thence North 48 degrees 52 minutes 00 seconds West along the North right of way line of said frontage road a distance of 385.66 feet to a point; thence in a Northwesterly direction along the North right of way line of said frontage road and along a curve to the left, having a radius of 532.00 feet, through a central angle of 17 degrees 23 minutes 05 seconds, an arc distance of 161.42 feet to the Southeast corner of Charlestown Park 3rd Plat; thence North 2 degrees 08 minutes 00 seconds East along the East line of Charlestown Park 3rd Plat a distance of 247.41 feet to the Northeast corner of Charlestown Park 3rd Plat; thence North 87 degrees 52 minutes 00 seconds West along the North line of Charlestown Park 3rd Plat a distance of 275.96 feet to the POINT OF BEGINNING and containing 1,698,840 Square Feet or 39.000 Acres, more or less.

PLAN SHEET KEY MAP



Dimension Plan

GBA
GEORGE BUTLER ASSOCIATES, INC.
Engineers • Architects
Kansas • Missouri • Illinois
One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219-9745
(913) 492-0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

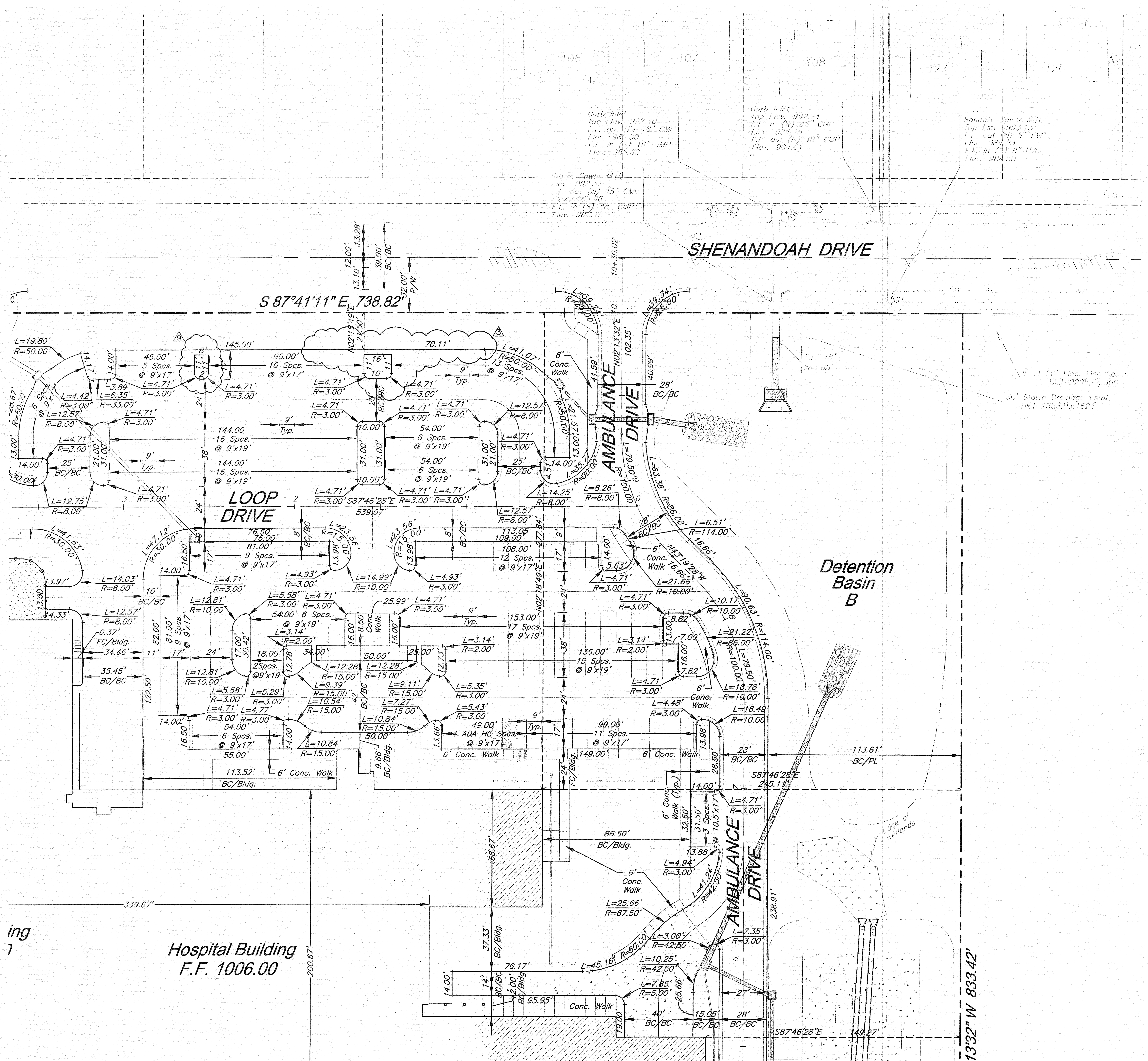
STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25862
REGISTERED PROFESSIONAL ENGINEER
6/2/06

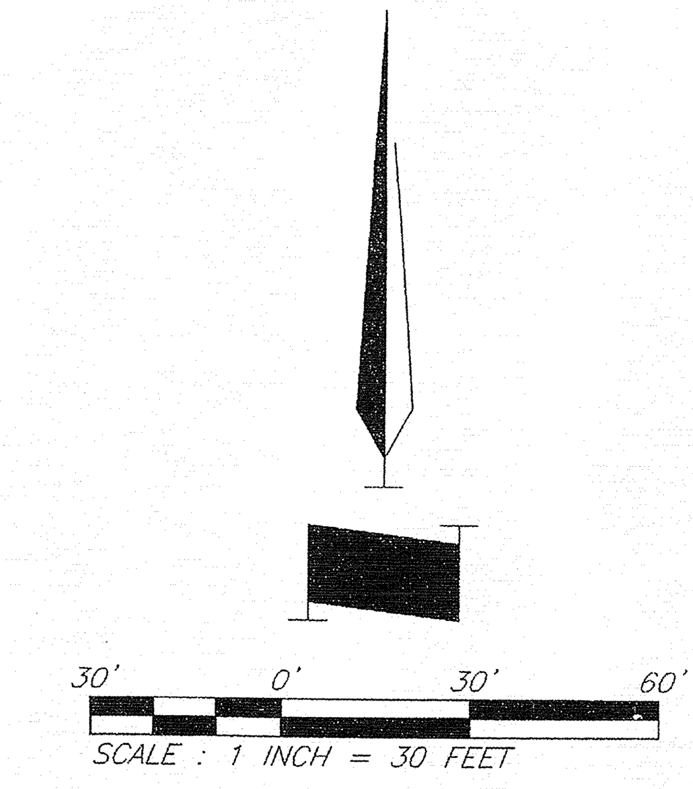
PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 – 06/02/06

DESIGNED
H.T.R. / J.W.M.
DRAWN
B.I.B.
REVIEWED
B.D.B.
SHEET TITLE
Site Dimension Plan

SHEET NUMBER
11 of 29





GEORGE BUTLER ASSOCIATES, INC.

Engineers • Architects

Kansas • Missouri • Illinois

One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219-9745
(913) 492-0400

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LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25862
REGISTERED PROFESSIONAL ENGINEER
10/23/06

PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 - 06/02/06
3 Revised - RFI #090 - July 14, 2006
9 ASI #7 - 10/20/06

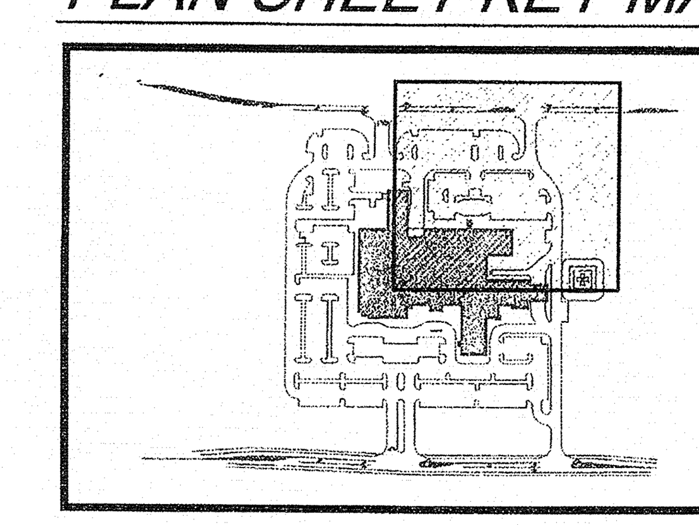
DESIGNED
H.T.R. / J.W.M.

DRAWN
B.I.B.

REVIEWED
B.D.B.

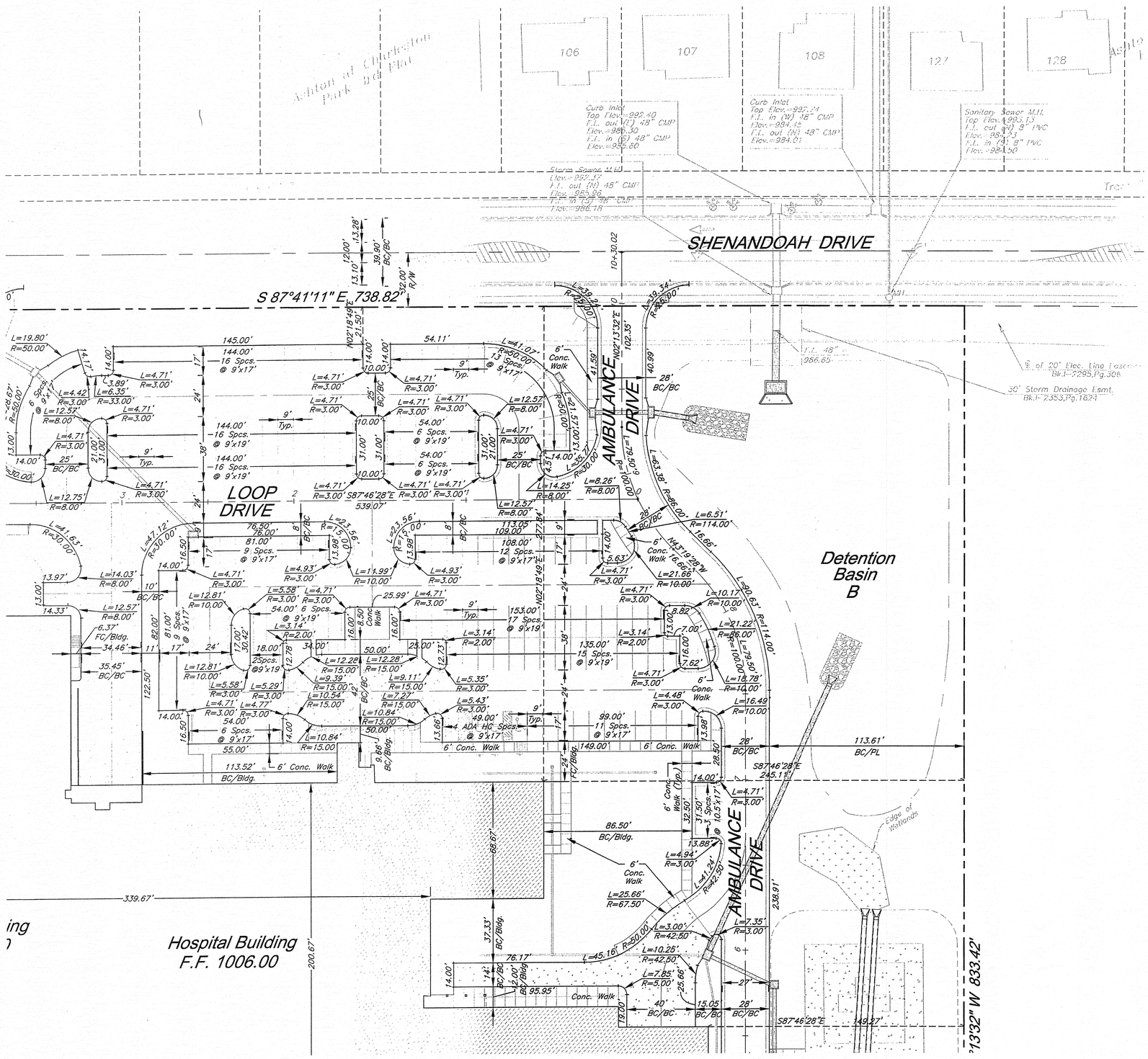
SHEET TITLE
Site Dimension Plan

PLAN SHEET KEY MAP



Dimension Plan

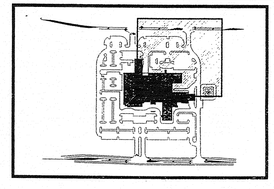
SHEET NUMBER
12 of 29



30' 0' 30' 60'

SCALE : 1 INCH = 30 FEET

PLAN SHEET KEY MAP



Dimension Plan

GBA

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Engineers • Architects
Kansas • Missouri • Illinois
One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219-9745
(913) 492-0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25882
REGISTERED PROFESSIONAL ENGINEER
6/1/06

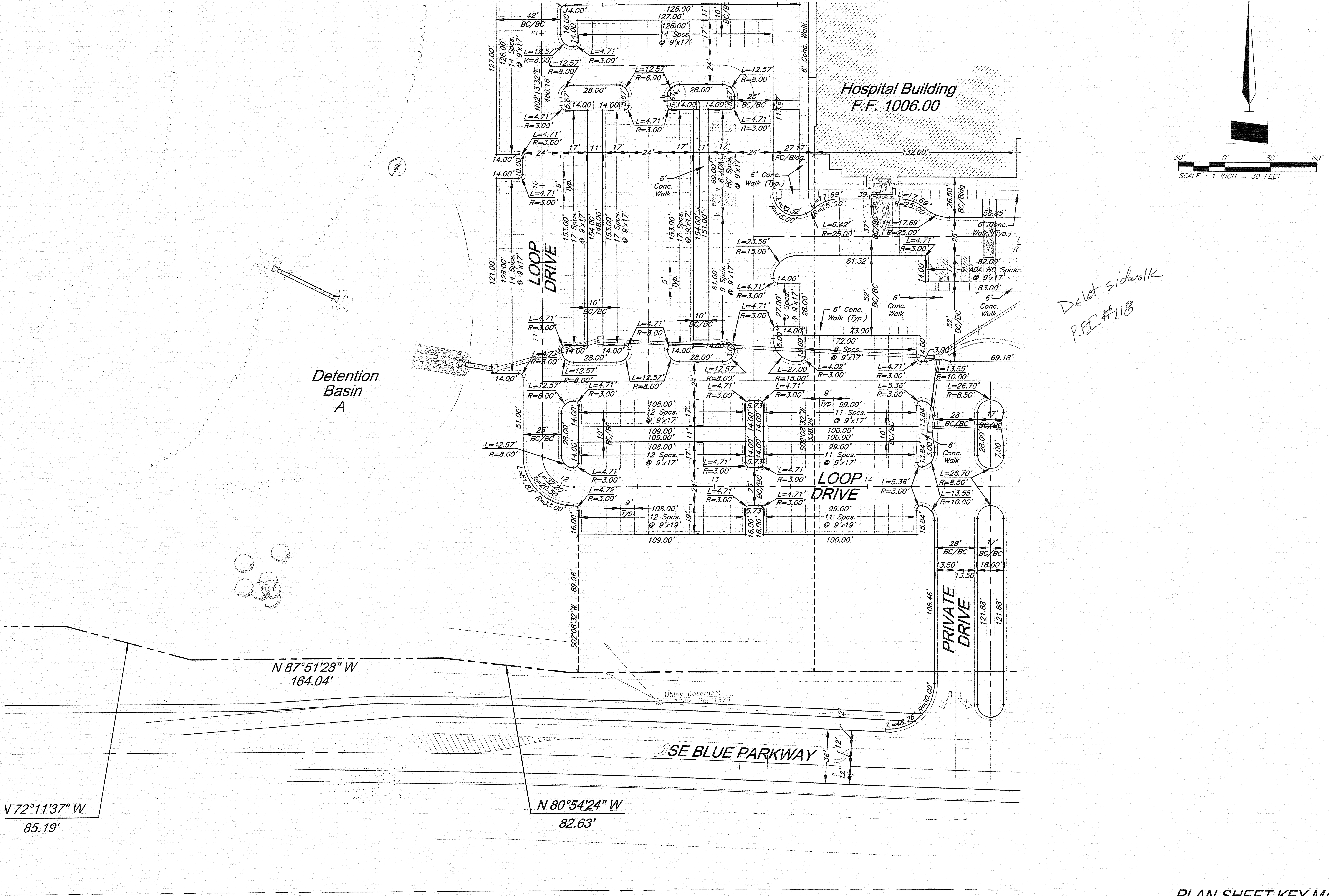
PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 – 06/02/06

DESIGNED
H.T.R. / J.W.M.
DRAWN
B.I.B.
REVIEWED
B.D.B.

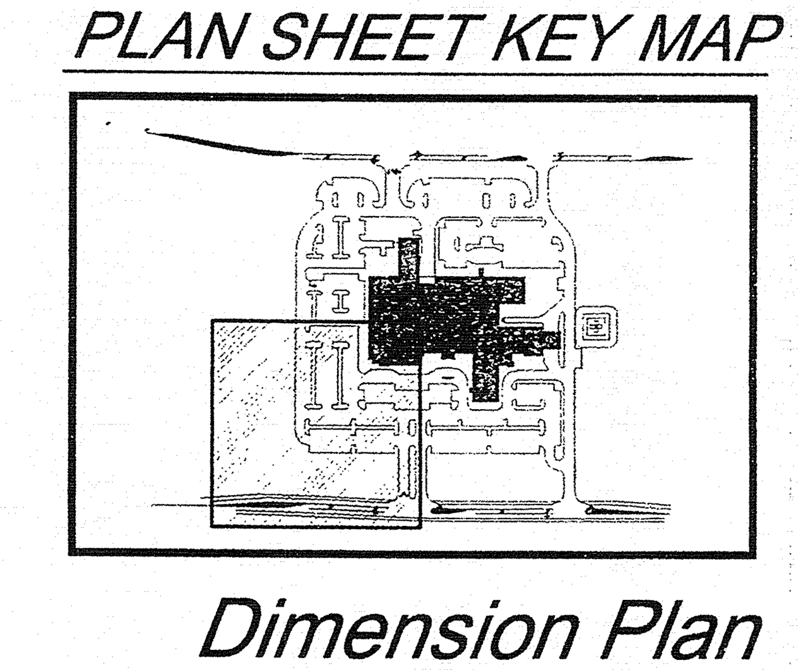
SHEET TITLE
Site Dimension Plan

SHEET NUMBER
12 of 29



Delet sidwolk
RFI #118

PLAN SHEET KEY MAP



Dimension Plan

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Kansas • Missouri • Illinois
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9801 Renner Boulevard
Lenexa, Kansas 66219-9745
(913) 492-0400

Site Construction Plans for:

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Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
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REGISTERED PROFESSIONAL ENGINEER
6/2/06

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SHEET TITLE
Site Dimension Plan

SHEET NUMBER
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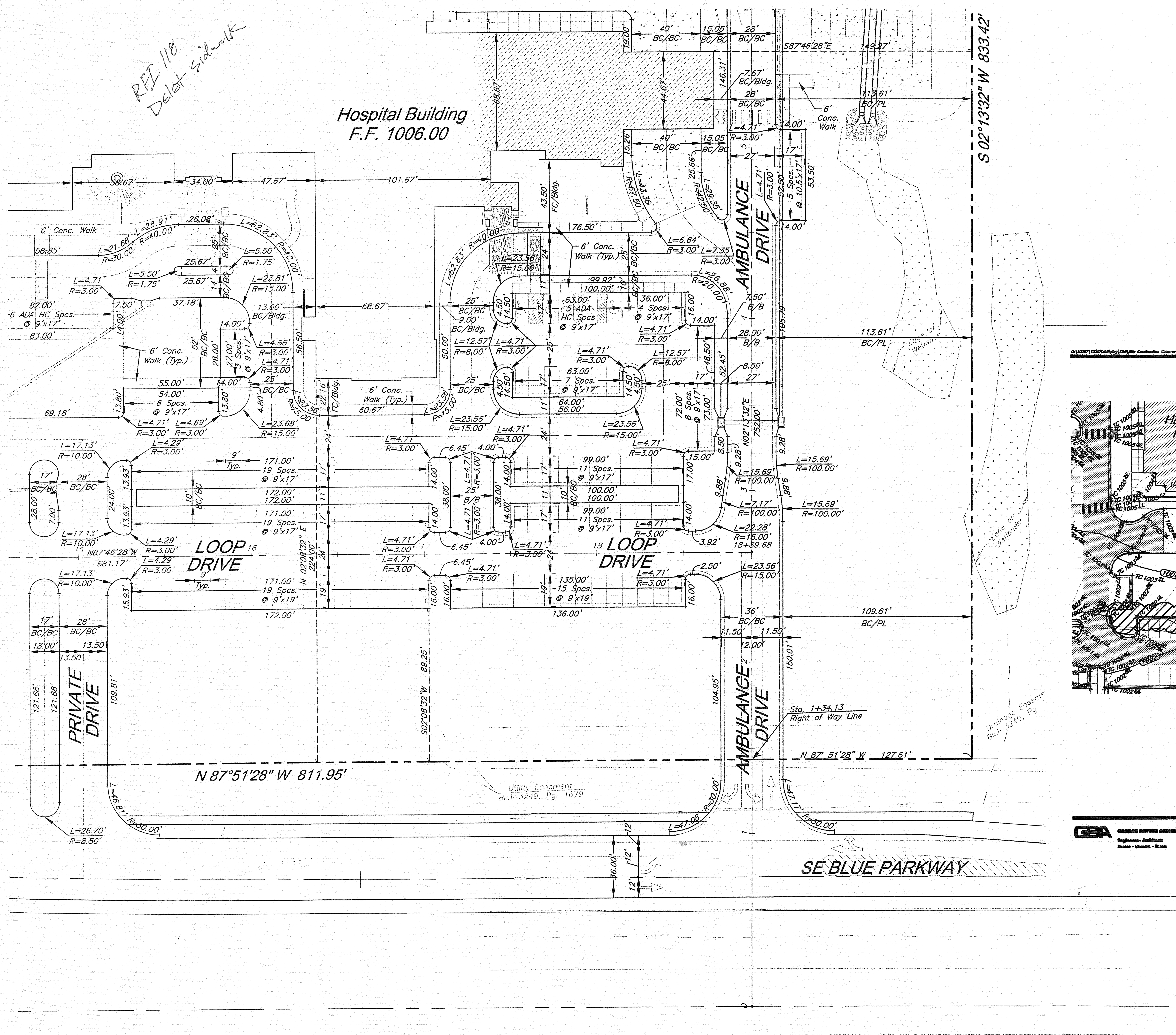
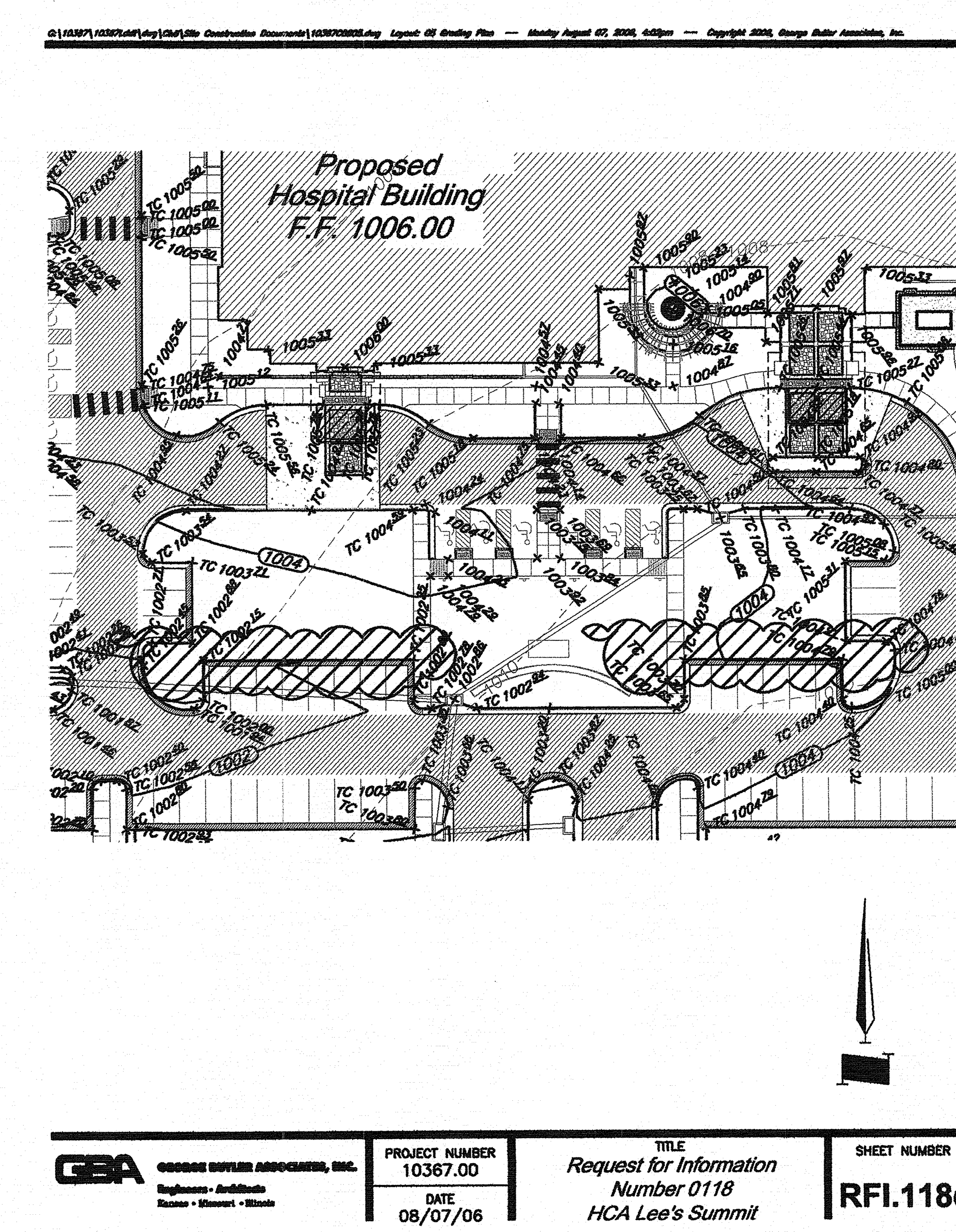
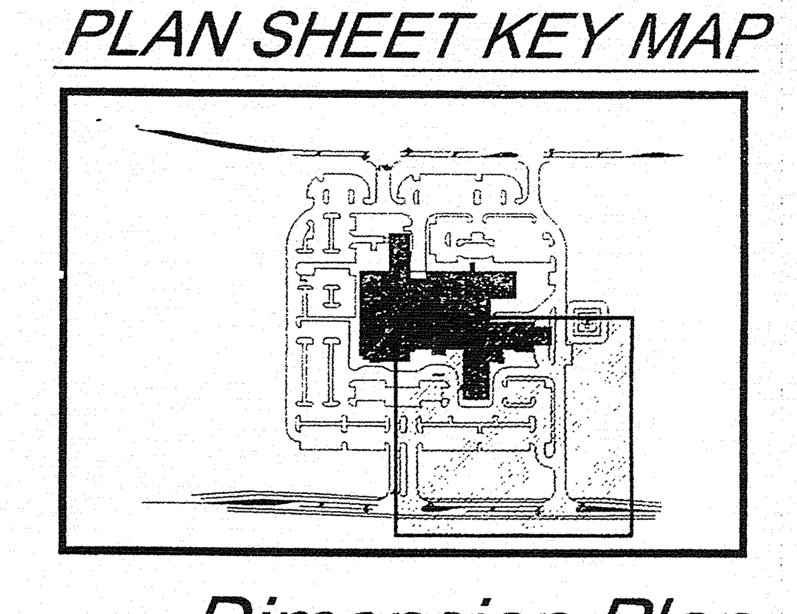




PLAN SHEET KEY MAP



Dimension Plan

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Southeast Corner of Todd George Road and Shenandoah Drive
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STATE OF MISSOURI – BRADLEY D. BURTON – NUMBER E-25862 – REGISTERED PROFESSIONAL ENGINEER

PROJECT NUMBER
10367.00

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DESIGNED
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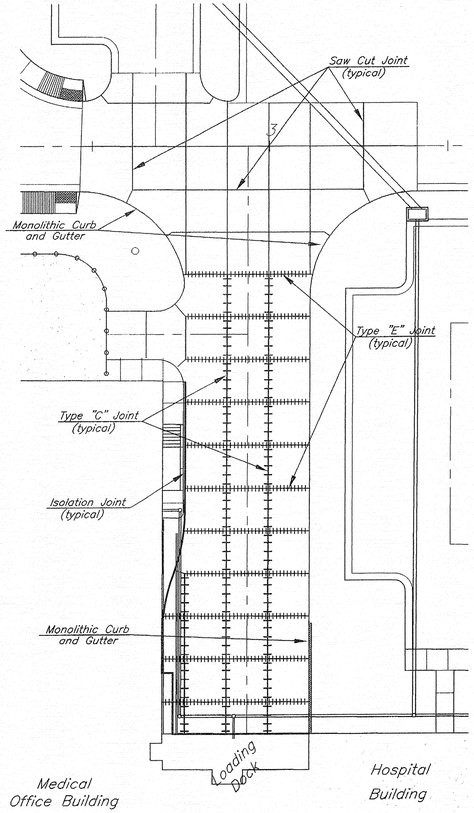
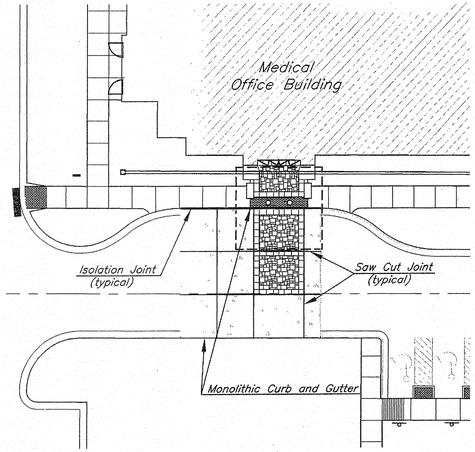
SHEET TITLE
Site Dimension Plan

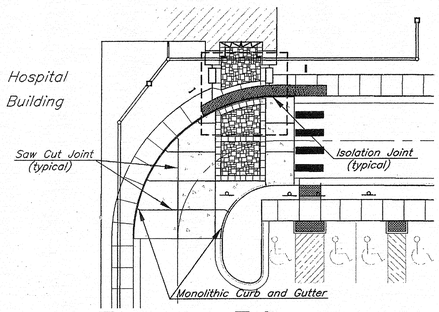
SHEET NUMBER



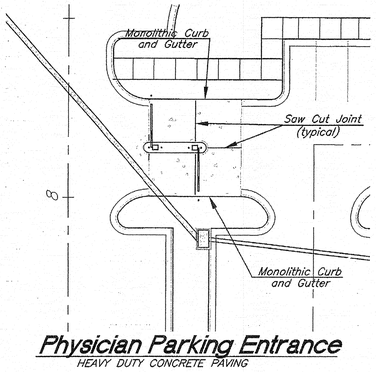
Loading Dock Area
HEAVY DUTY CONCRETE PAVING



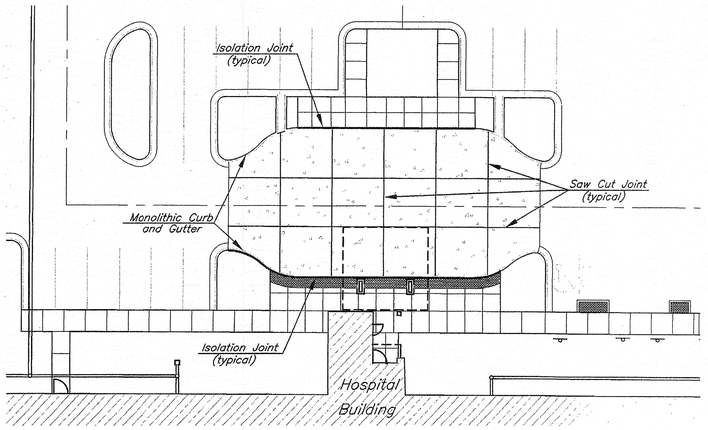
Medical Office Building South Entrance
HEAVY DUTY CONCRETE PAVING



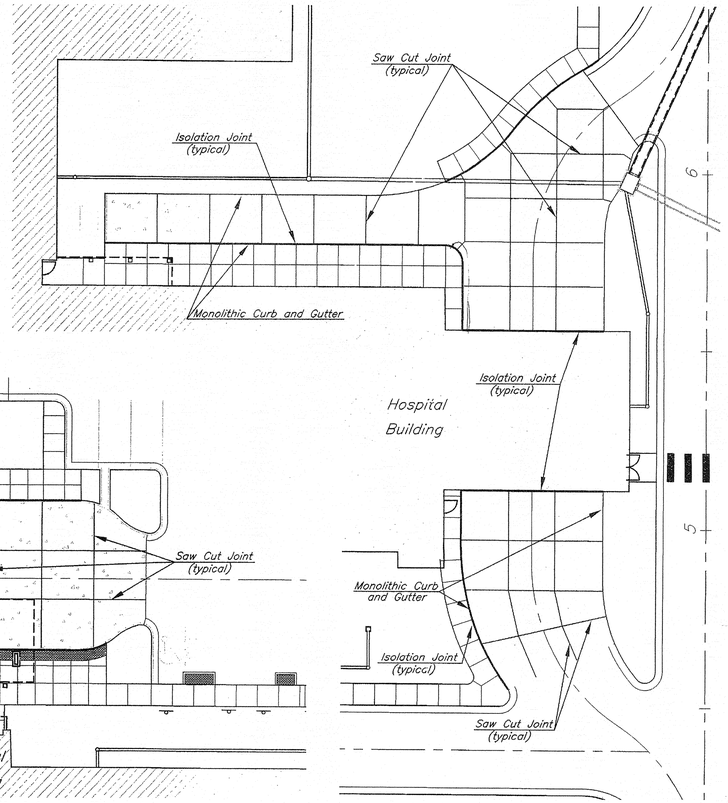
Emergency Entrance
HEAVY DUTY CONCRETE PAVING



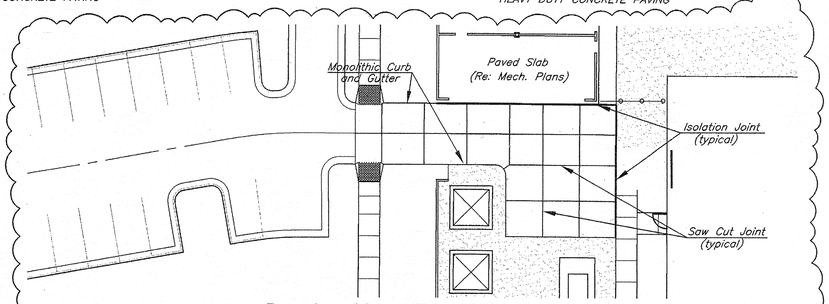
Physician Parking Entrance
HEAVY DUTY CONCRETE PAVING



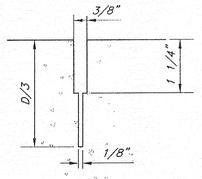
North Passenger Hospital Loading Area
HEAVY DUTY CONCRETE PAVING



Ambulance Entry Areas
HEAVY DUTY CONCRETE PAVING

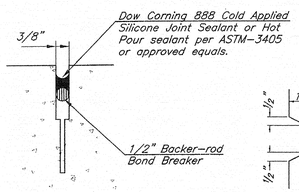


Service Yard Drive Paving
HEAVY DUTY CONCRETE PAVING

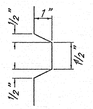


Notes:
1. The 1/8" Saw Cut (D/3 Depth) shall be done initially; the 3/8" saw cut shall be accomplished in a separate operation after the concrete has gained sufficient strength to avoid spalling.
2. D = Slab Thickness (Depth)

Typical Sawcut Joint



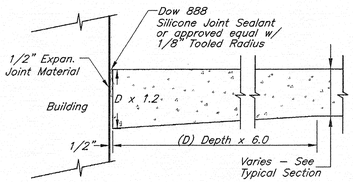
Typical Joint Sealant



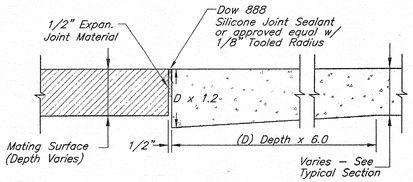
KEY

NOTES:

1. All joints and saw cuts shall be sealed using either a hot-pour sealant or a cold applied sealant per these plans.
2. Hot-Pour Sealants shall conform to ASTM D-3405. Material shall be applied in accordance with the manufacturer's recommendations.
3. Silicone joint sealing material shall be cold-applied. Silicone component type conforming to requirement of Fed. Spec. TT-S1543, Dow Corning "888 Silicone Highway Joint Sealant". Sealing material shall be pressure machine applied in accordance with the sealing material manufacturer's recommendations.
4. d = Depth of Slab
5. Type A Joint shall be used for Construction (End of Pour) Joint.
6. Dowell bars called out for lubrication shall be lubricated every other bar on each side of the joint.
7. Reinforcement is not continuous through joints. Woven Wire Fabric shall not be placed within 3" of joint.
8. Cold-applied Sealant shall be ¼" below surface and minimum ¼" Thick.



Thickened Edge Isolation Joint
At Building or Structure

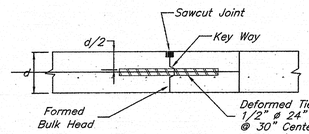


Thickened Edge Isolation Joint
At Adjoining Surface

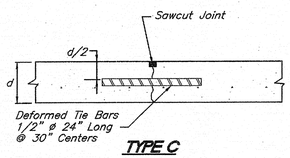
PAVING LEGEND

HEAVY DUTY CONCRETE PAVING

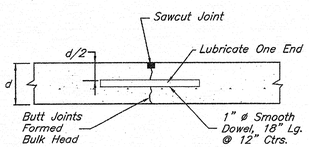
Notes: Joints to be equally spaced where not dimensioned as shown hereon. Maximum Joint Spacing shall be 15' Maximum in Either Direction



TYPE A
Tied Longitudinal Construction Joint

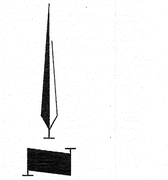


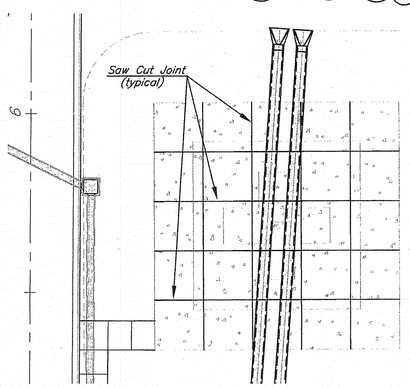
TYPE C
Longitudinal Joint



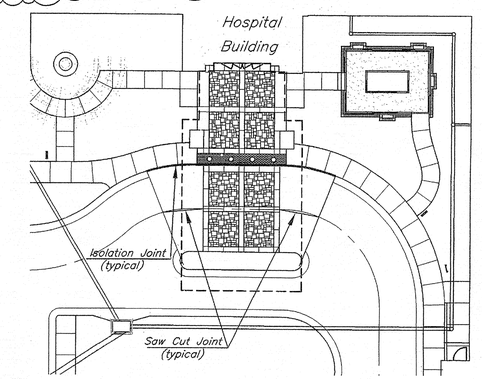
TYPE E
Transverse Contraction Joint

STANDARD CONCRETE JOINTING DETAILS
Not to Scale





Helipad
HEAVY DUTY CONCRETE PAVING



Hospital South Entrance
HEAVY DUTY CONCRETE PAVING

Concrete Pavement Jointing

GBA
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Site Construction Plans for:

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STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25862
REGISTERED PROFESSIONAL ENGINEER
10/23/06

PROJECT NUMBER
10367.00

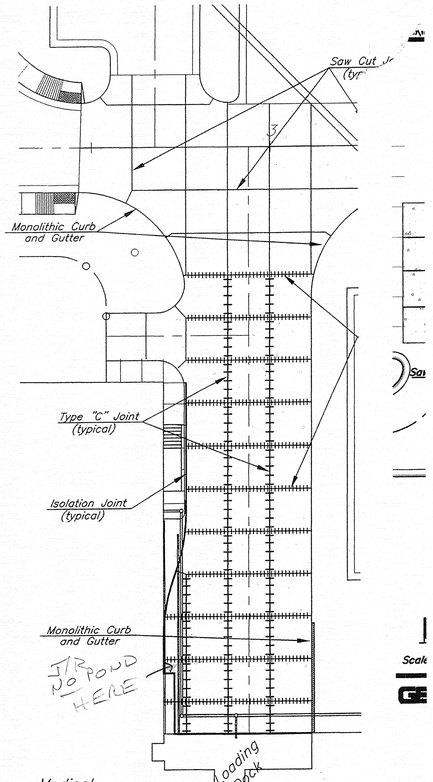
DATE
First Issue as: ASI #2 - 06/02/06
Revised - RFI #0115 - 08/07/06
ASI #7 - 10/20/06

DESIGNED
J.W.M.
DRAWN
J.W.M.
REVIEWED
B.D.B

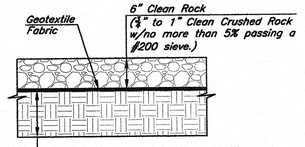
SHEET TITLE
Site Dimension Plan

SHEET NUMBER
15 of 29

RFI #118
115
GRAVEL yard + saw JOINTS



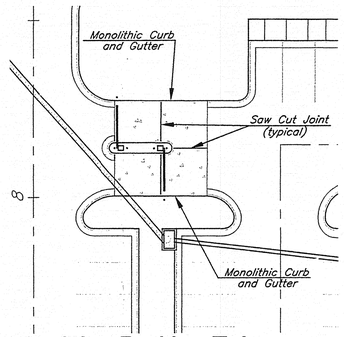
Loading Dock Area
HEAVY DUTY CONCRETE PAVING



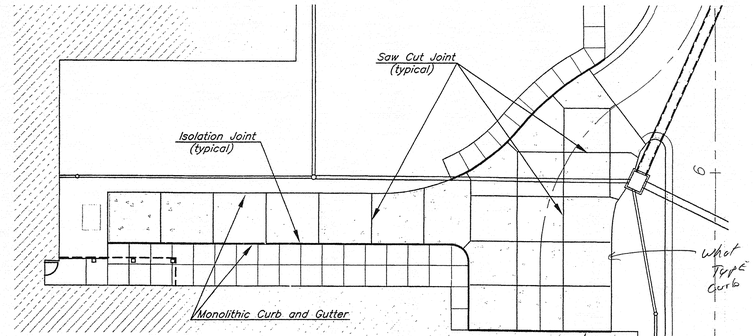
SERVICE YARD GRAVEL SECTION
Not to Scale

GBA GEORGE BUTLER ASSOCIATES, INC. Engineers • Architects Kansas • Missouri • Illinois	PROJECT NUMBER 10367.00	DATE 08/07/06	TITLE Request for Information Number 0118 HCA Lee's Summit	SHEET NUMBER RFI.118b

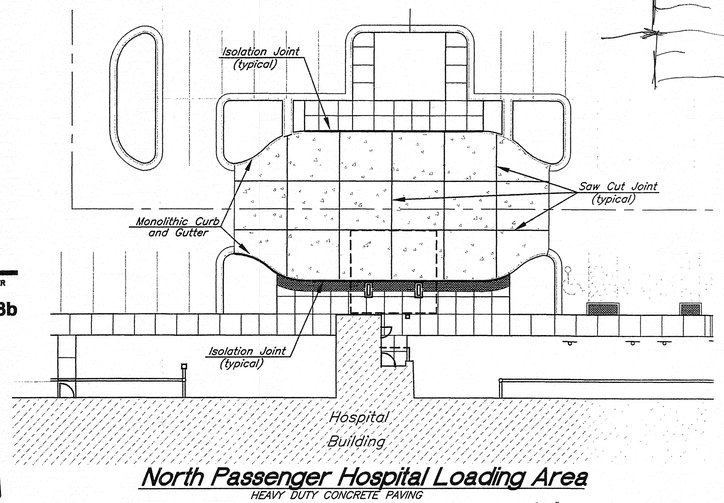
Emergency Entrance
HEAVY DUTY CONCRETE PAVING



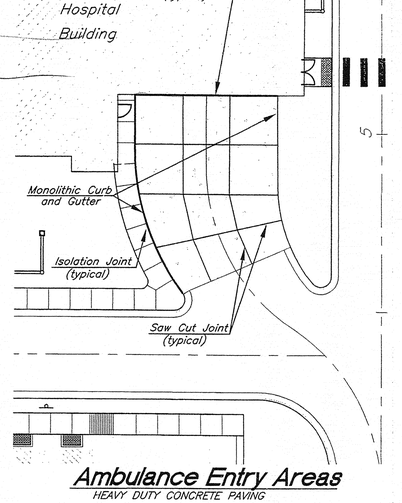
Physician Parking Entrance
HEAVY DUTY CONCRETE PAVING



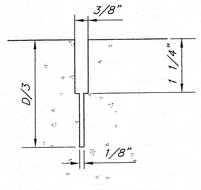
Notes: Joints to be equally spaced where not dimensioned as shown hereon. Maximum Joint Spacing shall be 15' Maximum in Either Direction



North Passenger Hospital Loading Area
HEAVY DUTY CONCRETE PAVING

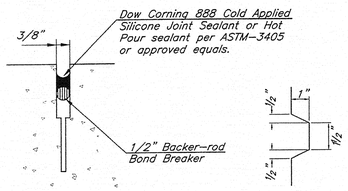


Ambulance Entry Areas
HEAVY DUTY CONCRETE PAVING



Notes:
1. The 1/8" Saw Cut (D/3 Depth) shall be done initially; the 3/8" saw cut shall be accomplished in a separate operation after the concrete has gained sufficient strength to avoid spalling.
2. D = Slab Thickness (Depth)

Typical Sawcut Joint



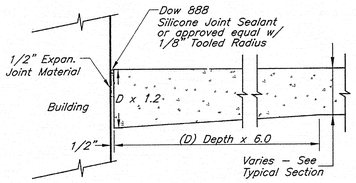
Typical Joint Sealant

KEY

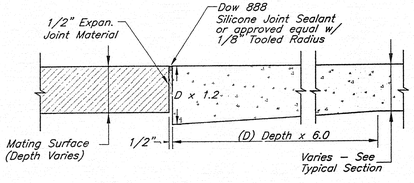
Notes: Joints to be equally spaced where not dimensioned as shown hereon. Maximum Joint Spacing shall be 15' Maximum in Either Direction

NOTES:

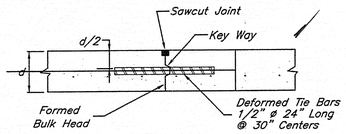
1. All joints and saw cuts shall be sealed using either a hot-pour sealant or a cold applied sealant per these plans.
2. Hot-Pour Sealants shall conform to ASTM D-3405. Material shall be applied in accordance with the manufacturer's recommendations.
3. Silicone joint sealing material shall be cold-applied. Silicone component type conforming to requirement of Fed. Spec. TT-S1543, Dow Corning "888 Silicone Highway Joint Sealant", Sealing material shall be pressure machine applied in accordance with the sealing material manufacturer's recommendations.
4. d = Depth of Slab
5. Type A Joint shall be used for Construction (End of Pour) Joint.
6. Dowell bars called out for lubrication shall be lubricated every other bar on each side of the joint.
7. Reinforcement is not continuous through joints. Woven Wire Fabric shall not be placed within 3" of joint.
8. Cold-applied Sealant shall be ¼" below surface and minimum ¼" Thick.



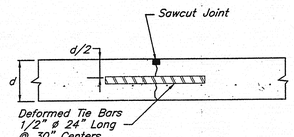
Thickened Edge Isolation Joint
At Building or Structure



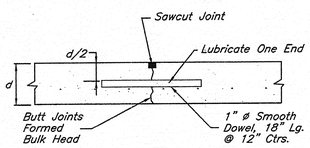
Thickened Edge Isolation Joint
At Adjoining Surface



TYPE A
Tied Longitudinal Construction Joint

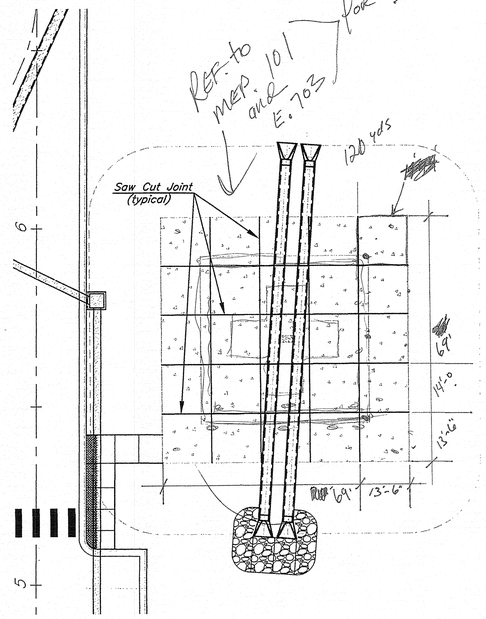


TYPE C
Longitudinal Joint



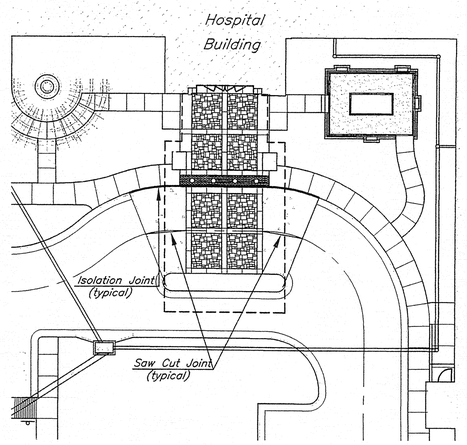
TYPE E
Transverse Contraction Joint

STANDARD CONCRETE JOINTING DETAILS
Not to Scale



Helipad
HEAVY DUTY CONCRETE PAVING

PAVING LEGEND
HEAVY DUTY CONCRETE PAVING



Hospital South Entrance
HEAVY DUTY CONCRETE PAVING

Concrete Pavement Jointing

GBA GEORGE BUTLER ASSOCIATES, INC.
Engineers • Architects
Kansas • Missouri • Illinois
One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219-9745
(913) 492-0400

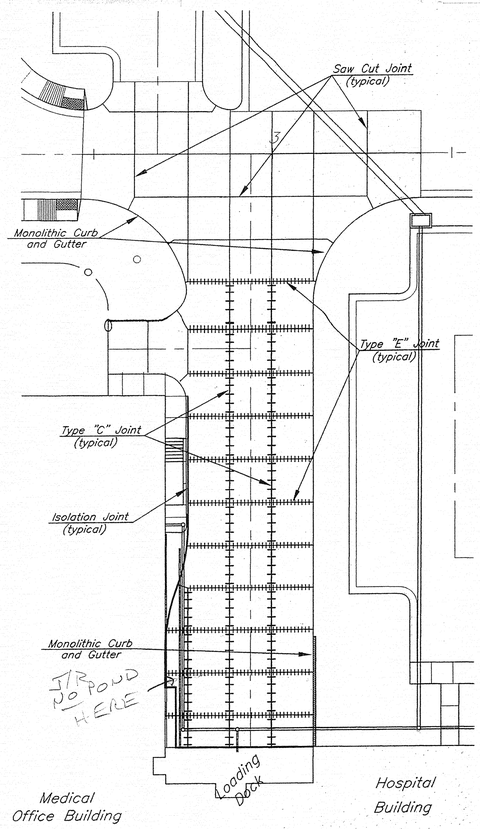
Site Construction Plans for:

REPLACEMENT HOSPITAL

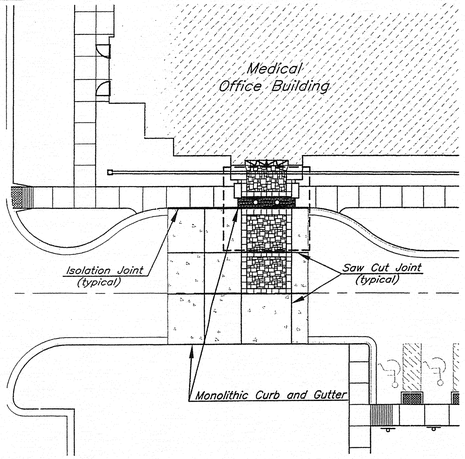
LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-28567
REGISTERED PROFESSIONAL ENGINEER
6/30

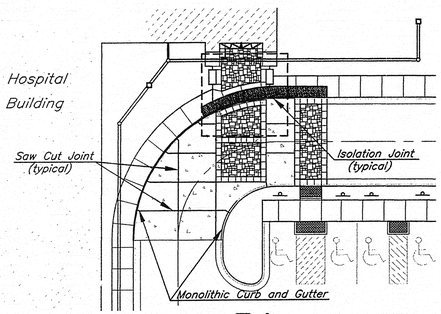
PROJECT NUMBER	10367.00
DATE	First Issue as: ASI #2 – 06/02/06
DESIGNED	J.W.M.
DRAWN	J.W.M.
REVIEWED	B.D.B
SHEET TITLE	Site Dimension Plan
SHEET NUMBER	15 of 29



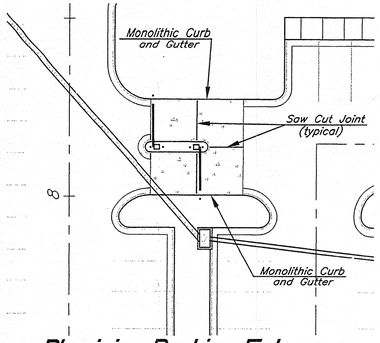
Loading Dock Area
HEAVY DUTY CONCRETE PAVING



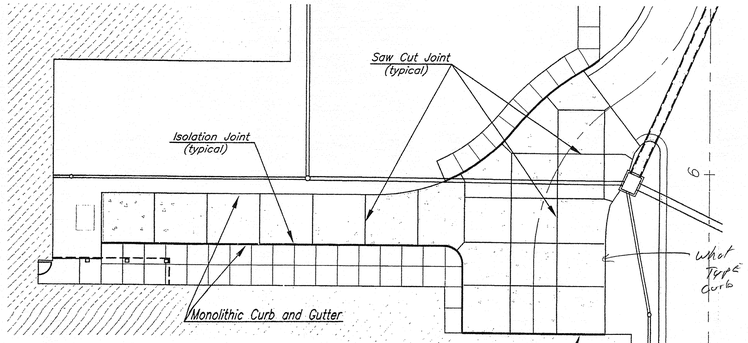
Medical Office Building South Entrance
HEAVY DUTY CONCRETE PAVING



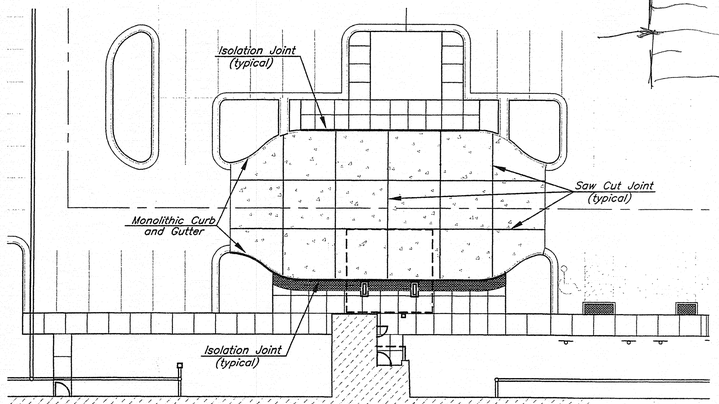
Emergency Entrance
HEAVY DUTY CONCRETE PAVING



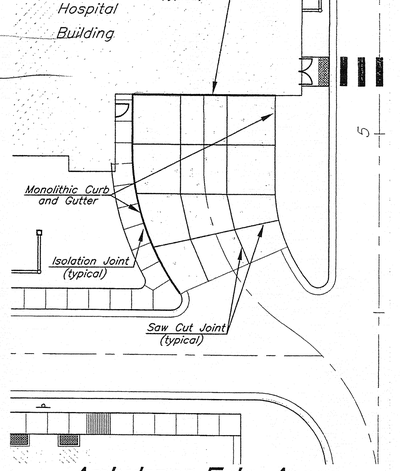
Physician Parking Entrance
HEAVY DUTY CONCRETE PAVING



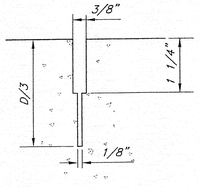
Notes: Joints to be equally spaced where not dimensioned as shown hereon. Maximum Joint Spacing shall be 15' Maximum in Either Direction



North Passenger Hospital Loading Area
HEAVY DUTY CONCRETE PAVING

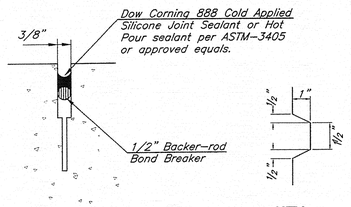


Ambulance Entry Areas
HEAVY DUTY CONCRETE PAVING



Notes:
1. The 1/8" Saw Cut (D/3 Depth) shall be done initially; the 3/8" saw cut shall be accomplished in a separate operation after the concrete has gained sufficient strength to avoid spalling.
2. D = Slab Thickness (Depth)

Typical Sawcut Joint



Typical Joint Sealant

KEY

Notes: Joints to be equally spaced where not dimensioned as shown hereon. Maximum Joint Spacing shall be 15' Maximum in Either Direction

NOTES:

1. All joints and saw cuts shall be sealed using either a hot-pour sealant or a cold applied sealant per these plans.
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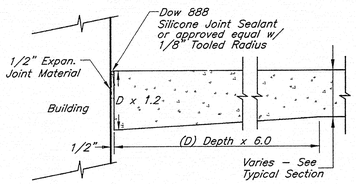
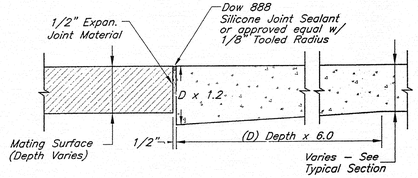
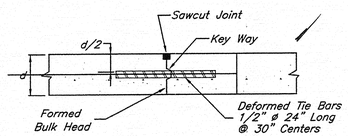


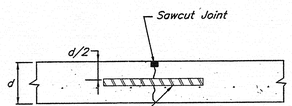
Thickened Edge Isolation Joint
At Building or Structure



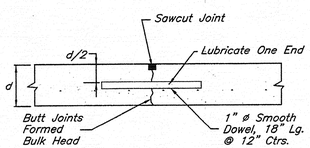
Thickened Edge Isolation Joint
At Adjoining Surface



TYPE A
Tied Longitudinal Construction Joint

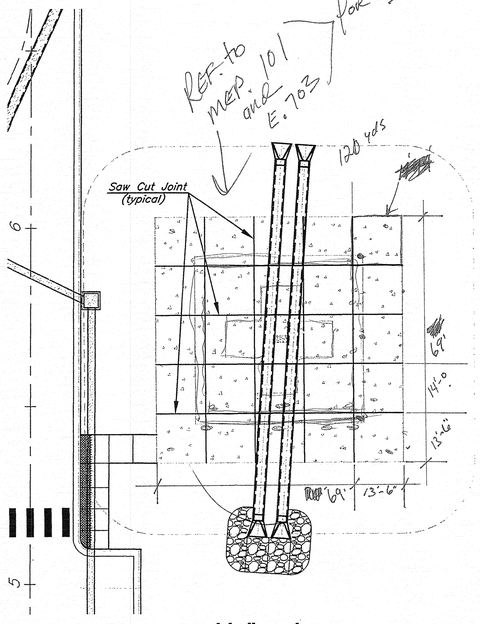


TYPE C
Longitudinal Joint



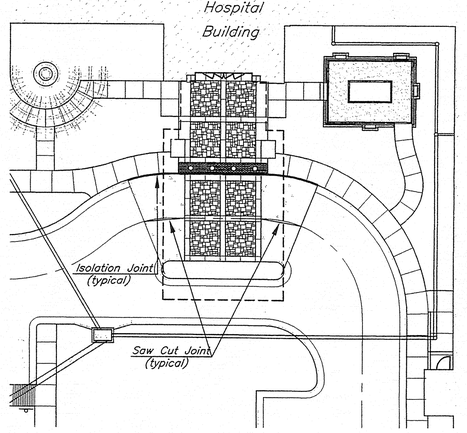
TYPE E
Transverse Contraction Joint

STANDARD CONCRETE JOINTING DETAILS
Not to Scale



Helipad
HEAVY DUTY CONCRETE PAVING

PAVING LEGEND
HEAVY DUTY CONCRETE PAVING



Hospital South Entrance
HEAVY DUTY CONCRETE PAVING

Concrete Pavement Jointing

GEORGE BUTLER ASSOCIATES, INC.
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9801 Renner Boulevard
Lenexa, Kansas 66219-9745
(913) 492-0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

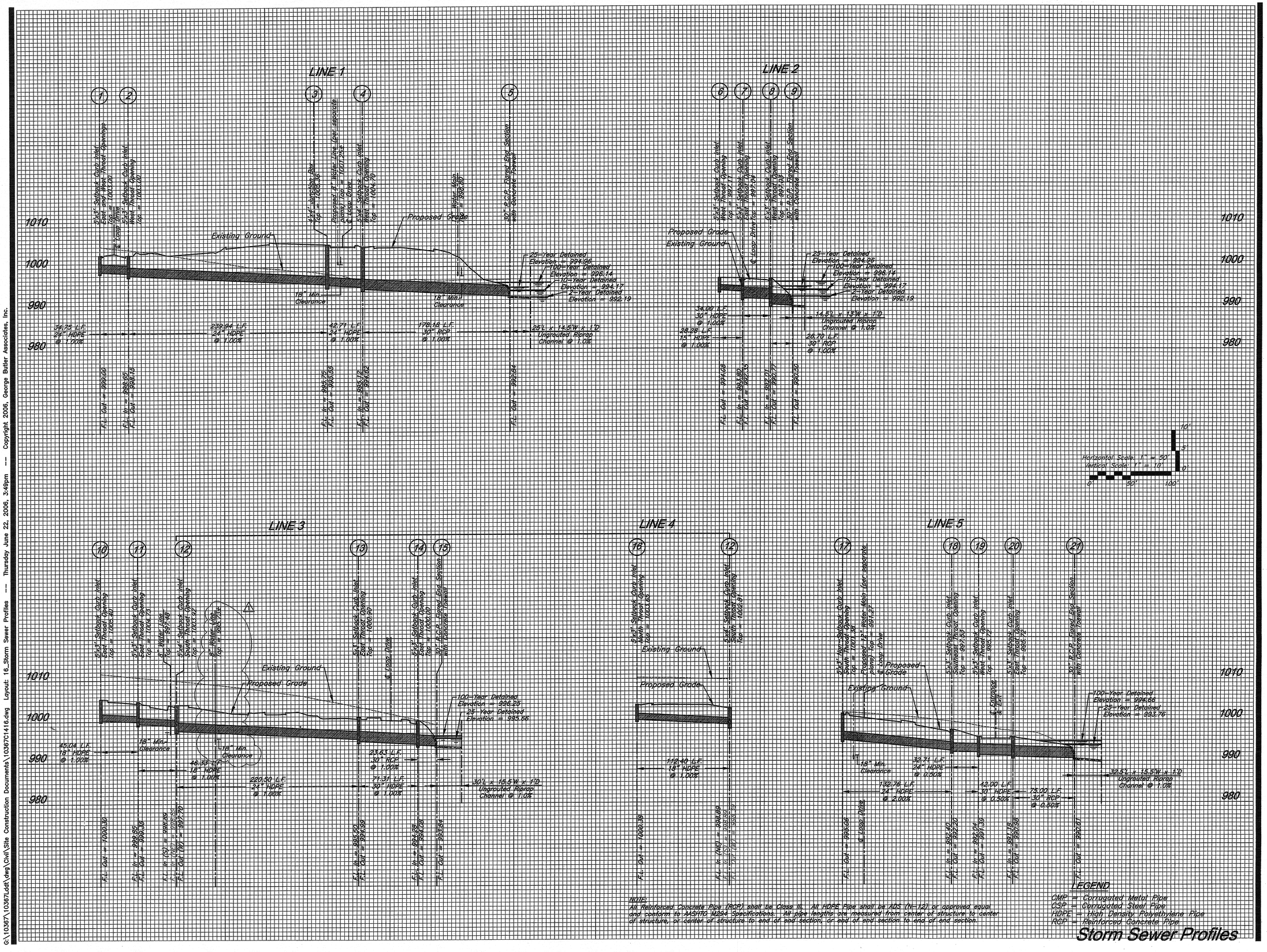
STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-28567
REGISTERED PROFESSIONAL ENGINEER

PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 - 06/02/06

DESIGNED
J.W.M.
DRAWN
J.W.M.
REVIEWED
B.D.B
SHEET TITLE
Site Dimension Plan

SHEET NUMBER
15 of 29



NOTE:
All Reinforced Concrete Pipe (RCP) shall be Class III. All HDPE Pipe shall be ADS (N-12) or approved equal and conform to AASHTO M294 Specifications. All pipe lengths are measured from center of structure to center of structure, or center of structure to end of end section, or end of end section to end of end section.

LEGEND
CMP = Corrugated Metal Pipe
CSP = Corrugated Steel Pipe
HDPE = High Density Polyethylene Pipe
RCP = Reinforced Concrete Pipe

Storm Sewer Profiles

GBA
GEORGE BUTLER ASSOCIATES, INC.
Engineers • Architects
Kansas • Missouri • Illinois
One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219-9745
(913) 492-0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

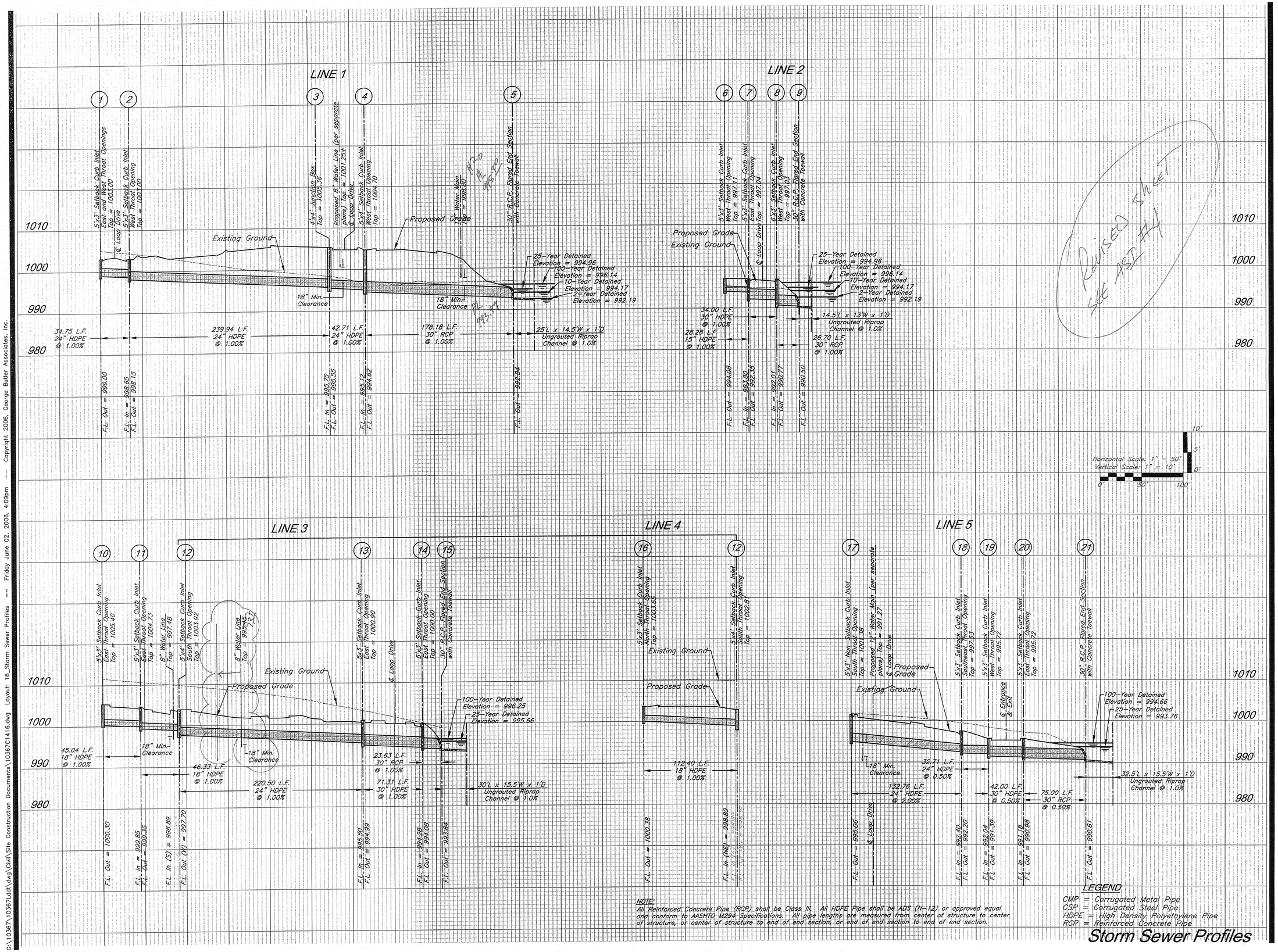
STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25862
REGISTERED PROFESSIONAL ENGINEER

PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 – 06/02/06
1 Revised: ASI #04 – 06/23/06

DESIGNED
R.G.Z.
DRAWN
R.G.Z. / B.I.B.
REVIEWED
B.D.B.
SHEET TITLE
Storm Sewer Profiles

SHEET NUMBER
16 of 29



NOTE:
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Storm Sewer Profiles

Revised Sheet #1

GEORGE BUTLER ASSOCIATES, INC.
Engineers • Architects
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9801 Renner Boulevard
Lenexa, Kansas 66219-0745
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Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
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STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25892
REGISTERED PROFESSIONAL ENGINEER
6/6/06

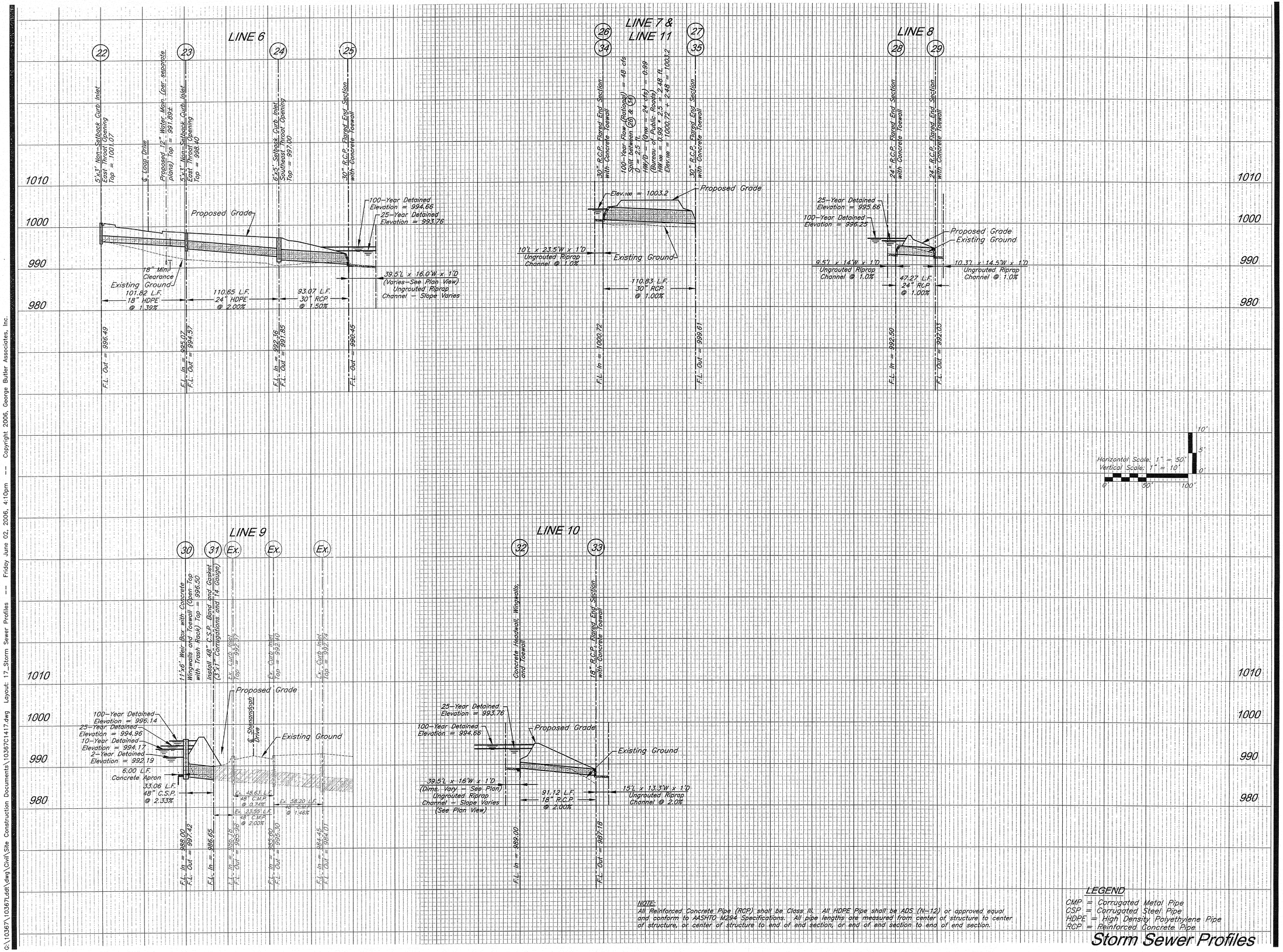
PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 – 06/02/06

DESIGNED
R.G.Z.
DRAWN
R.G.Z. / B.I.B.
REVIEWED
B.D.B.

SHEET TITLE
Storm Sewer Profiles

SHEET NUMBER
16 of 29



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CMP = Corrugated Metal Pipe
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HDPE = High Density Polyethylene Pipe
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Storm Sewer Profiles

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Site Construction Plans for:

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Southeast Corner of Todd George Road and Shenandoah Drive
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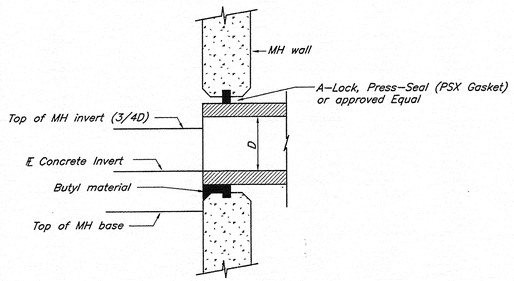
STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-26627
REGISTERED PROFESSIONAL ENGINEER
6/2/06

PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 - 06/02/06

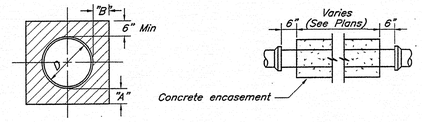
DESIGNED
R.G.Z.
DRAWN
R.G.Z. / B.I.B.
REVIEWED
B.D.B.
SHEET TITLE
Storm Sewer Profiles

SHEET NUMBER
17 of 29



FLEXIBLE WALL CONNECTION DETAIL

No Scale



Flexible (PVC)

D Nominal Pipe Size
A Fill Below Pipe (See Table)
B Side Clearances (See Table)

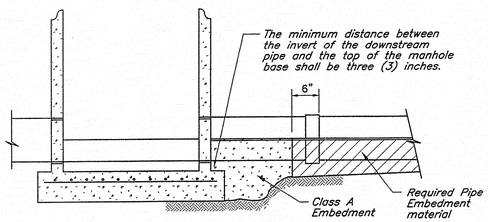
Table of Bedding Depths and Side Clearances				
D	Rock A	Rock B	Soil A	Soil B
4"–18"	6"	6"	6"	6"

Granular Fill

Concrete

NOTE:
Contractor shall provide documentation supporting the selected strength class of the pipe based on earth loadings and the chosen pipe bedding.

STANDARD EMBEDMENTS

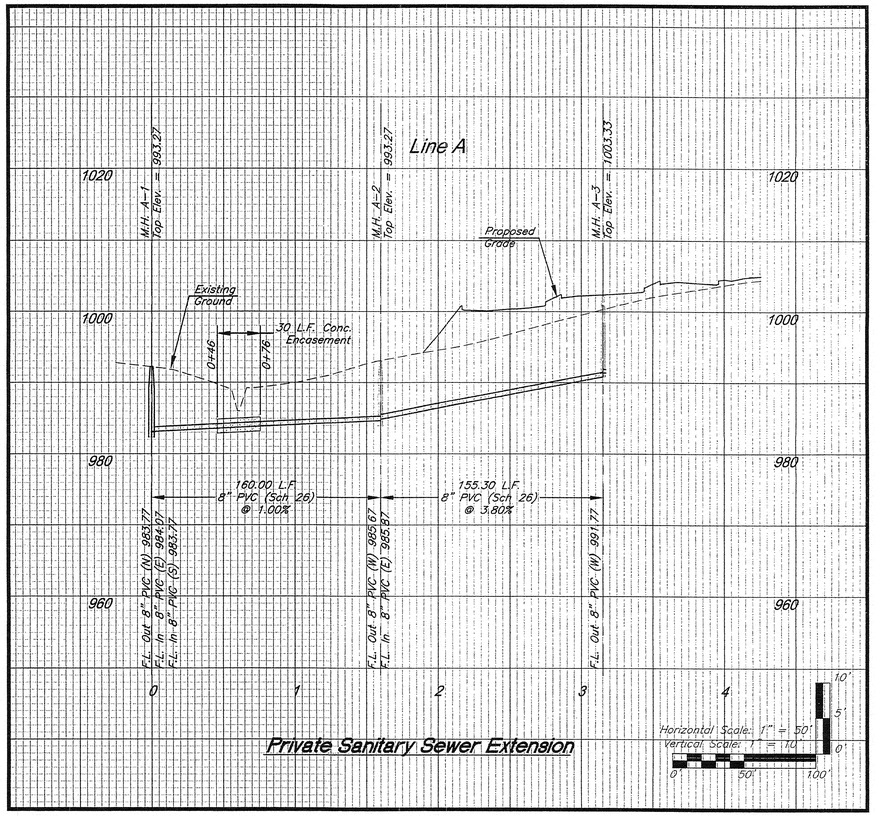


MANHOLE BASE SECTION

No Scale

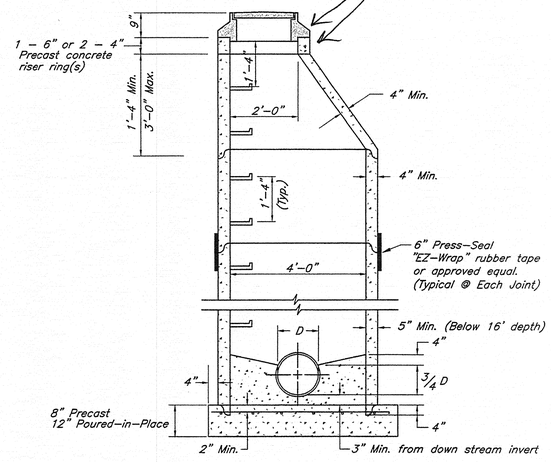
NOTES:

1. 1st joint of pipe shall be embedded in concrete to within 6" of the 1st joint for RCP & VCP.
2. If a flexible wall connection is used, class B embedment may be used.
3. If flexible or semi-flexible pipe is used, flexible wall connector must be used.
4. Flexible wall connections shall be press wedge, A-Lock, Press-Seal (PSX Gasket) or approved equal.



Private Sanitary Sewer Extension

L.S 101A ring 2 ETA Aug-06
L.S 101B Lid 3



4' DIA. STANDARD PRECAST MANHOLE (ECCENTRIC CONE)

No Scale

MANHOLE NOTES:

1. All manhole rings shall be set in a minimum of two (2) rows of 3/4 to 1 inch pre-formed butyl joint sealant.
2. All manholes shall be painted with an approved bituminuous waterproofing material. The coating shall be a minimum 14 mil. dry thickness and shall be applied in accordance with the manufacturer's recommendations. Waterproofing material shall not be applied within 12" of "doghouse" or "knock-out" openings.
3. Unless otherwise noted on the plans, the inside diameter of the manhole shall be 4'-0".
4. All manhole bases (pre-cast or poured-in-place) shall have No. 4 reinforcing bars placed on 6" centers both ways.
5. All standard manhole rings and covers shall be Clay & Bailey 2007MR, Neenah R-1669 with full mud ring, Deeter R-1916E with full mud ring, or approved equal.
6. Steel core, plastic coated steps shall be used (M.A. Ind., Inc. No. PS2-PF, or approved equal).
7. Reinforcement in all sections shall equal or exceed A.S.T.M. C-478 specifications.
8. Butyl material to be used at all manhole joints. O-Rings may be used for joints below the cone section, but the cone section itself shall not have O-ring joints.
9. Approved waterstop gasket and concrete mortar to be used around pipe in manholes where "doghouse" or "knock-out" openings exist.
10. The manhole flowline invert elevations shown on the plans shall be adjusted (up and/or down) to account for the sewer slope from the center of the manhole to the manhole wall.

Sanitary Sewer Profile & Details

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(913) 492-0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

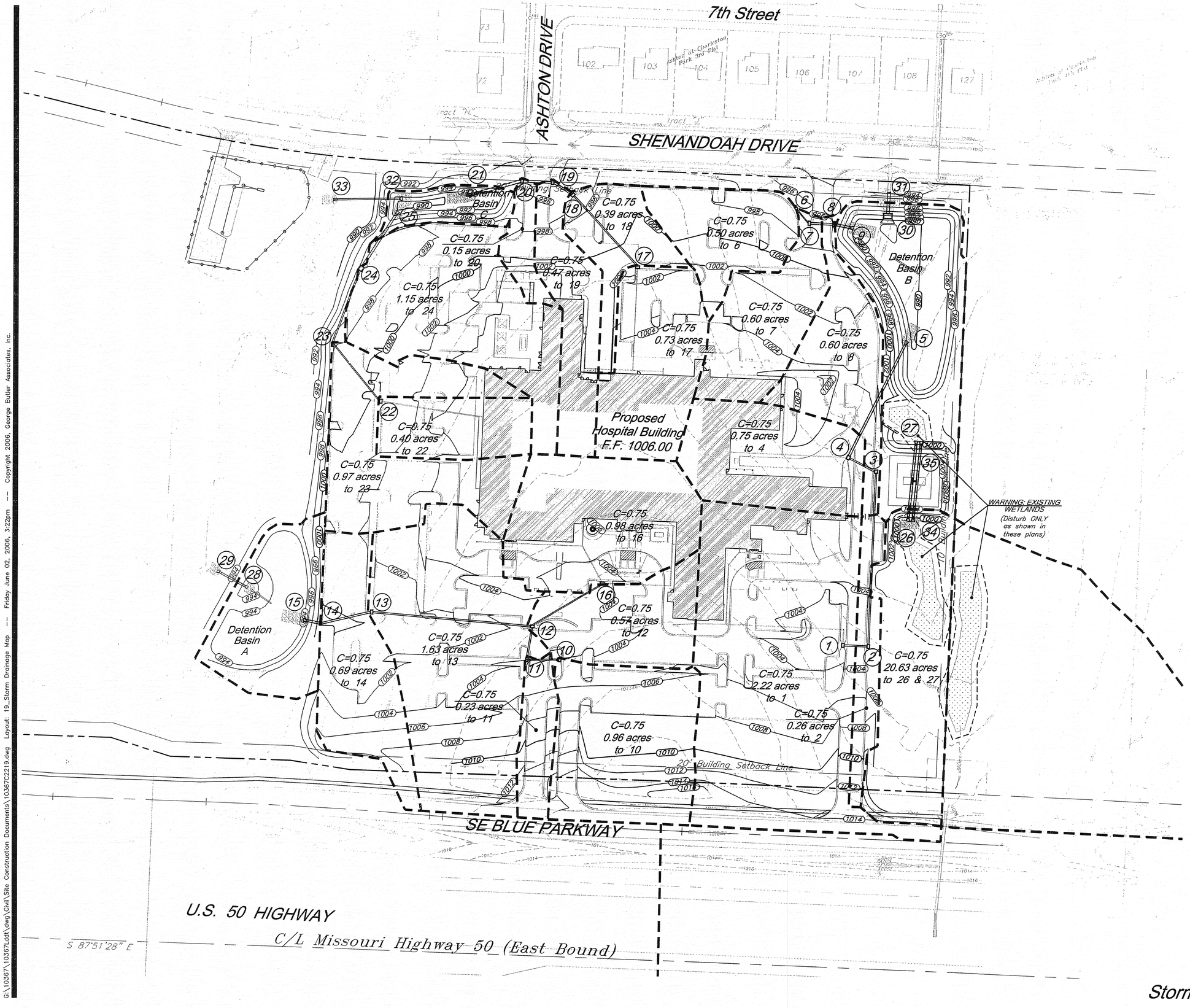
STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25662
REGISTERED PROFESSIONAL ENGINEER
6/30/06

PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 – 06/02/06

DESIGNED
R.G.Z.
DRAWN
R.G.Z. / B.I.B.
REVIEWED
B.D.B.
SHEET TITLE
Sanitary Sewer Profile & Details

SHEET NUMBER
18 of 29



Storm Drainage Map

GBA
GEORGE BUTLER ASSOCIATES, INC.
Engineers • Architects
Kansas • Missouri • Illinois
One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219-9745
(913) 492-0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway

Southeast Corner of Todd George Road and Shenandoah Drive

Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25862
REGISTERED PROFESSIONAL ENGINEER
6/2/06

PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 – 06/02/06

DESIGNED
R.G.Z.
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REVIEWED
B.D.B.
SHEET TITLE
Storm Drainage Map

SHEET NUMBER
19 of 29

STORM SEWER PIPE AND STRUCTURE TABLE

Hospital Corporation of America
Lee's Summit, Jackson County, Missouri
25 Year Return Period (4% Frequency)

Line Number	Structures From	Structures To	Runoff Calculations: Direct Area (acre)	Total Area (acre)	Precipitation Coefficient, K	C	K x C	Tc (min.)	Flow Time (min.)	Intensity (in./hr.)	Tributary Runoff, Q (cfs)	Structure and Pipe Description	Pipe Design: Pipe Material	Pipe Shape	Pipe Length (l.f.)	Round Pipe Diameter (in.)	Manning's n	Pipe Slope (%)	Full Pipe Discharge, Q (cfs)	Pipe Area, A (s.f.)	Full Pipe Velocity, V (fps)	Partial Pipe Velocity, V (fps)	Design Checks: Inlet Control HW/D (ft./ft.)	Headwater Inlet Ctrl Elev.	Outlet Head, H (ft.)	Headwater Outlet Ctrl Elev.	Structure Top Elevation	Upstream Flowline Elev.	Downstream Flowline Elev.	Downstream Water Elev.	Hydraulic Grade Elev.	Hydraulic Grade Allow.	Comments
																											1003.00				1001.24	1001.17	East and West Throat Openings
1	1		2.22		1.10	0.75	0.83	6.40		8.06	14.75	5'x3' Setback Curb Inlet																					
		2		2.22	1.10	0.75	0.83	6.40	0.06	8.06	14.75	24" HDPE	HDPE	Round	34.75	24	0.010	1.00	29.49	3.14	9.39	9.39	1.11	1001.22	0.66	1001.24							
	2		0.26		1.10	0.75	0.83	5.00		8.53	1.83	5'x3' Setback Curb Inlet																1003.00				1000.58	1001.17	
		3		2.48	1.10	0.75	0.83	6.46	0.42	8.04	16.44	24" HDPE	HDPE	Round	239.94	24	0.010	1.00	29.49	3.14	9.39	9.63	1.22	1000.58	1.90	999.85							
	3		0.00		1.10	0.75	0.83	5.00		8.53	0.00	4'x4' Junction Box																1005.36				997.95	1003.53	
		4		2.48	1.10	0.75	0.83	6.88	0.07	7.91	16.18	24" HDPE	HDPE	Round	42.71	24	0.010	1.00	29.49	3.14	9.39	9.59	1.20	997.95	0.84	997.86							
	4		0.75		1.10	0.75	0.83	5.00		8.53	5.28	5'x4' Setback Curb Inlet																1004.70				997.02	1002.87	Sized for 100-Year Storm Runoff
		5		3.23	1.10	0.75	0.83	6.95	0.35	7.88	21.01	30" RCP	RCP	Round	178.18	30	0.013	1.00	41.13	4.91	8.38	8.42	0.96	997.02	0.89	995.85					994.96		25-Year Storm Detention Elevation
																											997.11				995.46	996.61	
2	6		0.50		1.10	0.75	0.83	5.00		8.53	3.52	5'x3' Setback Curb Inlet																					
		7		0.50	1.10	0.75	0.83	5.00	0.07	8.53	3.52	15" HDPE	HDPE	Round	28.28	15	0.010	1.00	8.42	1.23	6.86	6.54	0.93	992.50	0.28	995.46							
	7		0.60		1.10	0.75	0.83	5.80		8.25	4.08	5'x3' Setback Curb Inlet																997.04				995.19	996.54	
		8		1.10	1.10	0.75	0.83	5.07	0.07	8.50	7.72	30" HDPE	HDPE	Round	34.00	30	0.010	1.00	53.47	4.91	10.89	7.75	0.71	991.58	0.07	995.19							
	8		0.60		1.10	0.75	0.83	6.00		8.19	4.05	6'x3' Setback Curb Inlet																997.03				995.12	996.53	
		9		1.70	1.10	0.75	0.83	5.15	0.06	8.48	11.89	30" RCP	RCP	Round	26.70	30	0.013	1.00	41.13	4.91	8.38	7.23	0.76	991.18	0.16	995.12					994.96		25-Year Storm Detention Elevation
																											1005.40				1001.80	1003.57	
3	10		0.96		1.10	0.75	0.83	6.90		7.90	6.26	5'x3' Setback Curb Inlet																					
		11		0.96	1.10	0.75	0.83	6.90	0.10	7.90	6.26	18" HDPE	HDPE	Round	45.04	18	0.010	1.00	13.69	1.77	7.75	7.56	1.00	1001.80	0.45	1001.77							
	11		0.23		1.10	0.75	0.83	5.00		8.53	1.62	5'x3' Setback Curb Inlet																1004.73				1001.32	1002.90	
		12		1.19	1.10	0.75	0.83	7.00	0.10	7.87	7.72	18" HDPE	HDPE	Round	46.33	18	0.010	1.00	13.69	1.77	7.75	7.97	1.18	1001.12	0.69	1001.32							
	12		0.57		1.10	0.75	0.83	5.00		8.53	4.01	5'x4' Setback Curb Inlet																1003.92				1000.63	1002.09	
		13		2.74	1.10	0.75	0.83	7.10	0.38	7.84	17.72	24" HDPE	HDPE	Round	220.50	24	0.010	1.00	29.49	3.14	9.39	9.80	1.30	1000.31	2.09	1000.63							
	13		1.63		1.10	0.75	0.83	5.00		8.53	11.47	5'x3' Setback Curb Inlet																1000.90				998.54	999.07	
		14		4.37	1.10	0.75	0.83	7.47	0.11	7.73	27.86	30" HDPE	HDPE	Round	71.31	30	0.010	1.00	53.47	4.91	10.89	10.99	1.18	997.95	1.08	998.54							
	14		0.69		1.10	0.75	0.83	5.00		8.53	4.86	5'x3' Non-Setback Curb Inlet																1000.00				997.46	998.17	
		15		5.06	1.10	0.75	0.83	7.58	0.04	7.70	32.12	30" RCP	RCP	Round	23.63	30	0.013	1.00	41.13	4.91	8.38	9.26	1.35	997.46	1.14	996.80					995.66		25-Year Storm Detention Elevation
																											1003.65				1001.62	1001.82	
4	16		0.98		1.10	0.75	0.83	5.00		8.53	6.90	5'x3' Setback Curb Inlet																					
		12		0.98	1.10	0.75	0.83	5.00	0.24	8.53	6.90	18" HDPE	HDPE	Round	112.40	18	0.010	1.00	13.69	1.77	7.75	7.75	1.07	1001.62	0.84	1001.47							
																																1000.63		
																											1001.38				996.51	999.55	
5	17		0.73		1.10	0.75	0.83	5.00		8.53	5.14	5'x3' Non-Setback Curb Inlet																					
		18		0.73	1.10	0.75	0.83	5.00	0.25	8.53	5.14	24" HDPE	HDPE	Round	132.76	24	0.010	2.00	41.70	3.14	13.27	9.01	0.72	996.51	0.13	994.44							
	18		0.39		1.10	0.75	0.83	5.00		8.53	2.74	5'x3' Setback Curb Inlet																997.53				994.31	995.70	Sized for 100-Year Storm Runoff
		19		1.12	1.10	0.75	0.83	5.00	0.07	8.53	7.88	24" HDPE	HDPE	Round	32.71	24	0.010	0.50	20.85	3.14	6.64	6.17	0.80	993.79	0.19	994.31							
	19		0.47		1.10	0.75	0.83	5.00		8.53	3.31	5'x3' Setback Curb Inlet																995.72				993.89	993.89	Sized for 100-Year Storm Runoff
		20		1.59	1.10	0.75	0.83	5.00	0.11	8.53	11.19	36" HDPE	HDPE	Round	42.00	30	0.010	0.50	37.81	4.91	7.70	6.70	0.75	993.27	0.15	994.12							
	20		0.15		1.10	0.75	0.83	5.00		8.53	1.06	5'x3' Setback Curb Inlet																995.72				993.89	993.89	Sized for 100-Year Storm Runoff
		21		1.74	1.10	0.75	0.83	5.00	0.31	8.53	12.24	36" RCP	RCP	Round	75.00	30	0.013	0.50	29.08	4.91	5.92	5.66	0.77	992.90	0.21	993.97					993.76		25-Year Storm Detention Elevation
																											1001.07				997.60	999.24	
6	22		0.40		1.10	0.75	0.83	5.00		8.53	2.81	5'x3' Non-Setback Curb Inlet																					
		23		0.40	1.10	0.75	0.83	5.00	0.25	8.53	2.81	18" HDPE	HDPE	Round	101.82	18	0.010	1.39	16.14	1.77	9.13	6.86	0.74	997.60	0.13	996.42							
	23		0.97		1.10	0.75	0.83	5.00		8.53	6.83	5'x3' Non-Setback Curb Inlet																998.40				996.29	996.57	Sized for 100-Year Storm Runoff
		24		1.37	1.10	0.75	0.83	5.00	0.17	8.53	9.64	24" HDPE	HDPE	Round	110.65	24	0.010	2.00	41.70	3.14	13.27	10.79	0.86	996.29	0.42	994.64							
	24		1.15		1.10	0.75	0.83	5.00		8.53	8.09	6'x5' Setback Curb Inlet																997.00				994.24	995.17	Sized for 100-Year Storm Runoff
		25		2.52	1.10	0.75	0.83	5.00	0.15	8.53	17.73	30" RCP	RCP	Round	93.07	30	0.013	1.50	50.37	4.91	10.26	9.36	0.88	994.04	0.48	994.24					993.76		25-Year Storm Detention Elevation
																											1005.30				1005.71	1005.30	Under Helipad
7	26		3.92		1.10	0.24	0.26	10.00		7.05	44.79	30" End Section																					
		27		3.92	1.10	0.24	0.26	10.00	0.20	7.05	44.79	30" RCP	RCP	Round	110.83	30	0.013	1.00	41.13	4.91	8.38	9.13	2.00	1005.71	3.26	1004.12							HW/D = 4.58/2.5 = 1.83
																														1000.86			
																											997.00				994.19	997.00	
8	28		0.68		1.10	0.51	0.56	5.00		8.53	3.25	30" End Section																					
		29		0.68	1.10	0.51	0.56	5.00	0.16	8.53	3.25	30" RCP	RCP	Round	47.27	30	0.013	1.00	41.13	4.91	8.38	5.00	0.68	994.19	0.01	993.29							Detention Basin A Outlet
																														993.28			
																											997.00				990.11	997.00	
9	30		1.21		1.10	0.51	0.56	5.00		8.53	5.79	48" End Section																					
		31		1.21	1.10	0.51	0.56	5.00	0.11	8.53	5.79	48" CSP	CSP	Round	33.06	48	0.023	2.33	124.26	12.57	9.89	5.03	0.67	990.11	0.01	988.66							Detention Basin B Outlet
																														988.65			
																											995.00				990.02	995.00	0.90 ft. Diameter Steel, Orifice Plate
10	32		0.21		1.10	0.51	0.56	5.00		8.53	1.00	18" End Section																					
		33		0.21	1.10	0.51	0.56	5.00	0.32	8.53	1.00	18" RCP	RCP	Round	91.12	18	0.013	2.00	14.90	1.77	8.43	4.79	0.68	990.02	0.02	987.94							Detention Basin C Outlet
																														987.93			
																											1005.30				1005.71	1005.30	Under Helipad
11	34		3.92		1.10	0.24	0.26	10.00		7.05	44.79	30" End Section																					
		35		3.92	1.10	0.24	0.26	10.00	0.20	7.05	44.79	30" RCP	RCP	Round	110.83	30	0.013	1.00	41.13	4.91	8.38	9.13	2.00	1005.71	3.26	1004.12							HW/D = 4.58/2.5 = 1.83
																														1000.86			

STORM SEWER PIPE AND STRUCTURE TABLE

Hospital Corporation of America
Lee's Summit, Jackson County, Missouri
100 Year Return Period (1% Frequency)

Line Number	Structures From	Structures To	Runoff Calculations: Direct Area (acre)	Total Area (acre)	Precipitation Coefficient, K	C	K x C	Tc (min.)	Flow Time (min.)	Intensity (in./hr.)	Tributary Runoff, Q (cfs)	Structure and Pipe Description	Pipe Design: Pipe Material	Pipe Shape	Pipe Length (l.f.)	Round Pipe Diameter (in.)	Manning's n	Pipe Slope (%)	Full Pipe Discharge, Q (cfs)	Pipe Area, A (s.f.)	Full Pipe Velocity, V (fps)	Partial Pipe Velocity, V (fps)	Design Checks: Inlet Control HW/D (ft./ft.)	Headwater Inlet Ctrl Elev.	Outlet Head, H (ft.)	Headwater Outlet Ctrl Elev.	Structure Top Elevation	Upstream Flowline Elev.	Downstream Flowline Elev.	Downstream Water Elev.	Hydraulic Grade Elev.	Hydraulic Grade Allow.	Comments
																											1003.00				1004.30	1002.50	East and West Throat Openings
1	1		2.22		1.25	0.75	0.94	6.40		9.77	20.34	5'x3' Setback Curb Inlet																					
		2		2.22	1.25	0.75	0.94	6.40	0.06	9.77	20.34	24" HDPE	HDPE	Round	34.75	24	0.010	1.00	29.49	3.14	9.39	10.11	1.50	1002.01	1.26	1004.30							
	2		0.26		1.25	0.75	0.94	5.00		10.32	2.52	5'x3' Setback Curb Inlet																1003.00				1003.04	1002.50	
		3		2.48	1.25	0.75	0.94	6.46	0.39	9.75	22.66	24" HDPE	HDPE	Round	239.94	24	0.010	1.00	29.49	3.14	9.39	10.34	1.71	1001.56	3.61	1003.04							
	3		0.00		1.25	0.75	0.94	5.00		10.32	0.00	4'x4' Junction Box																1005.36				999.43	1004.86	
		4		2.48	1.25	0.75	0.94	6.88	0.07	9.60	22.31	24" HDPE	HDPE	Round	42.71	24	0.010	1.00	29.49	3.14	9.39	10.32	1.67	998.90	1.59	999.43							
	4		0.75		1.25	0.75	0.94	5.00		10.32	7.26	5'x4' Setback Curb Inlet																1004.70				997.84	1004.20	Sized for 100-Year Storm Runoff
		5		3.23	1.25	0.75	0.94	6.95	0.33	9.57	28.98	30" RCP	RCP	Round	178.18	30	0.013	1.00	41.13	4.91	8.38	9.06	1.23	997.68	1.70	997.84					996.14		100-Year Storm Detention Elevation
																											1001.38				996.60	1000.88	
5	17		0.73		1.25	0.75	0.94	5.00		10.32	7.06	5'x3' Non-Setback Curb Inlet																					
		18		0.73	1.25	0.75	0.94	5.00	0.22	10.32	7.06	24" HDPE	HDPE	Round	132.76	24	0.010	2.00	41.70	3.14	13.27	9.88	0.77	996.60	0.25	995.59							
	18		0.39		1.25	0.75	0.94	5.00		10.32	3.77	5'x3' Setback Curb Inlet																997.53				995.70	997.03	Sized for 100-Year Storm Runoff
		19		1.12	1.25	0.75	0.94	5.00	0.06	10.32	10.84	24" HDPE	HDPE	Round	32.71	24	0.010	0.50	20.85	3.14	6.64	6.70	0.91	994.01	0.35	995.70							
	19		0.47		1.25	0.75	0.94	5.00		10.32	4.55	5'x3' Setback Curb Inlet																995.72				995.22	995.22	Sized for 100-Year Storm Runoff
		20		1.59	1.25	0.75	0.94	5.00	0.10	10.32	15.39	36" HDPE	HDPE	Round	42.00	36	0.010	0.50	37.81	4.91	7.70	7.29	0.83	993.46	0.29	995.35							
	20		0.15		1.25	0.75	0.94	5.00		10.32	1.45	5'x3' Setback Curb Inlet																995.72				995.06	995.22	Sized for 100-Year Storm Runoff
		21		1.74	1.25	0.75	0.94	5.00	0.29	10.32	16.84	36" RCP	RCP	Round	75.00	36	0.013	0.50	29.08	4.91	5.92	6.13	0.86	993.12	0.40	995.06					994.66		100-Year Storm Detention Elevation
																											1001.07				997.69	1000.57	
6	22		0.40		1.25	0.75	0.94	5.00		10.32	3.87	5'x3' Non-Setback Curb Inlet																					
		23		0.40	1.25	0.75	0.94	5.00	0.23	10.32	3.87	18" HDPE	HDPE	Round	101.82	18	0.010	1.39	16.14	1.77	9.13	7.51	0.80	997.69	0.25	996.87							
	23		0.97		1.25	0.75	0.94	5.00		10.32	9.39	5'x3' Non-Setback Curb Inlet																998.40				996.62	997.90	Sized for 100-Year Storm Runoff
		24		1.37	1.25	0.75	0.94	5.00	0.16	10.32	13.26	24" HDPE	HDPE	Round	110.65	24	0.010	2.00	41.70	3.14	13.27	11.78	1.02	996.62	0.79	996.32							
	24		1.15		1.25	0.75	0.94	5.00		10.32	11.13	6'x5' Setback Curb Inlet																997.00				995.56	996.50	Sized for 100-Year Storm Runoff
		25		2.52	1.25	0.75	0.94	5.00	0.14	10.32	24.39	30" RCP	RCP	Round	93.07	30	0.013	1.50	50.37	4.91	10.26	10.17	1.06	994.51	0.90	995.56							
																											991.85	990.45	994.66				
																															994.66		100-Year Storm Detention Elevation

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REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

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BRADLEY D. BURTON
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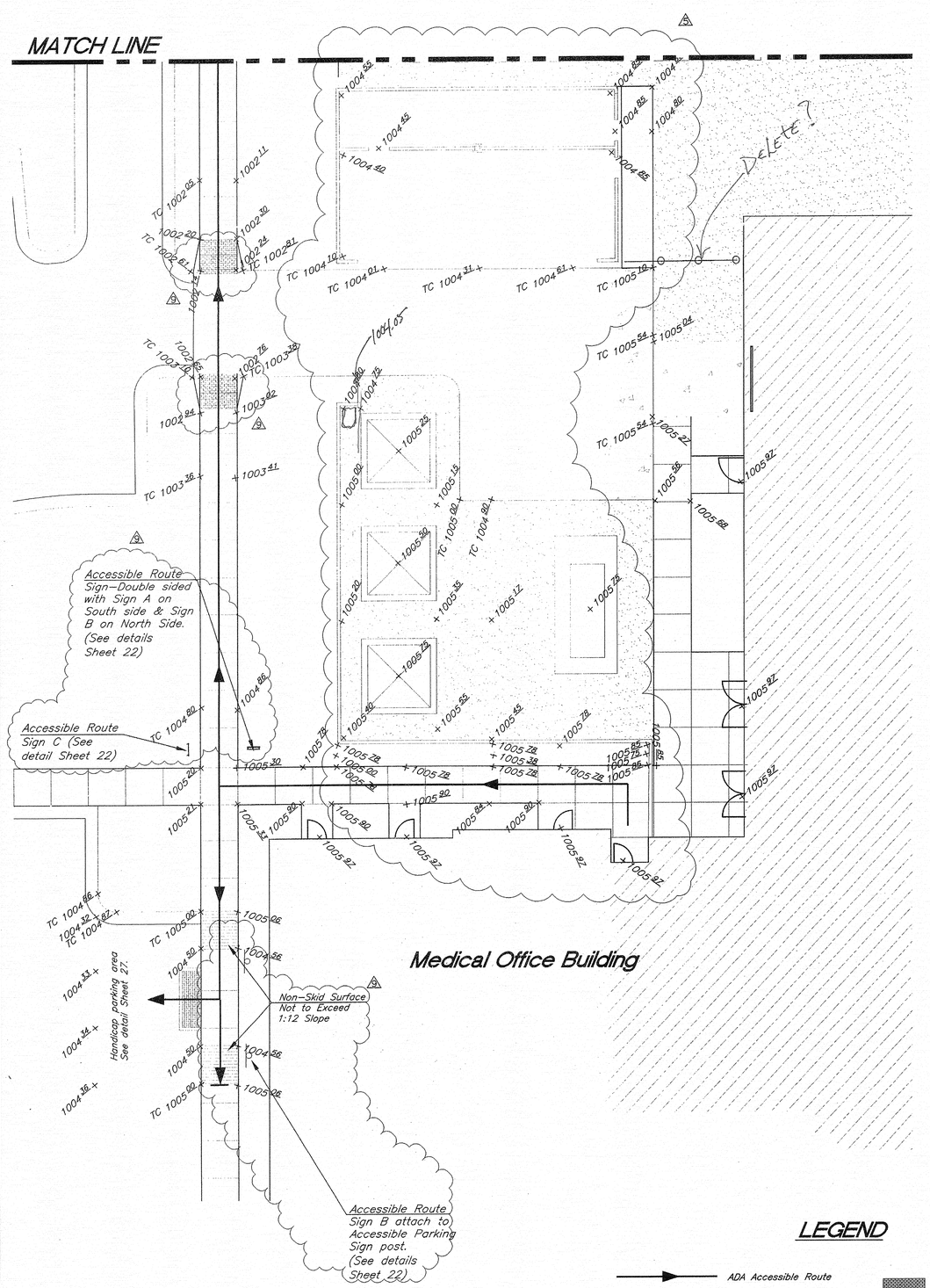
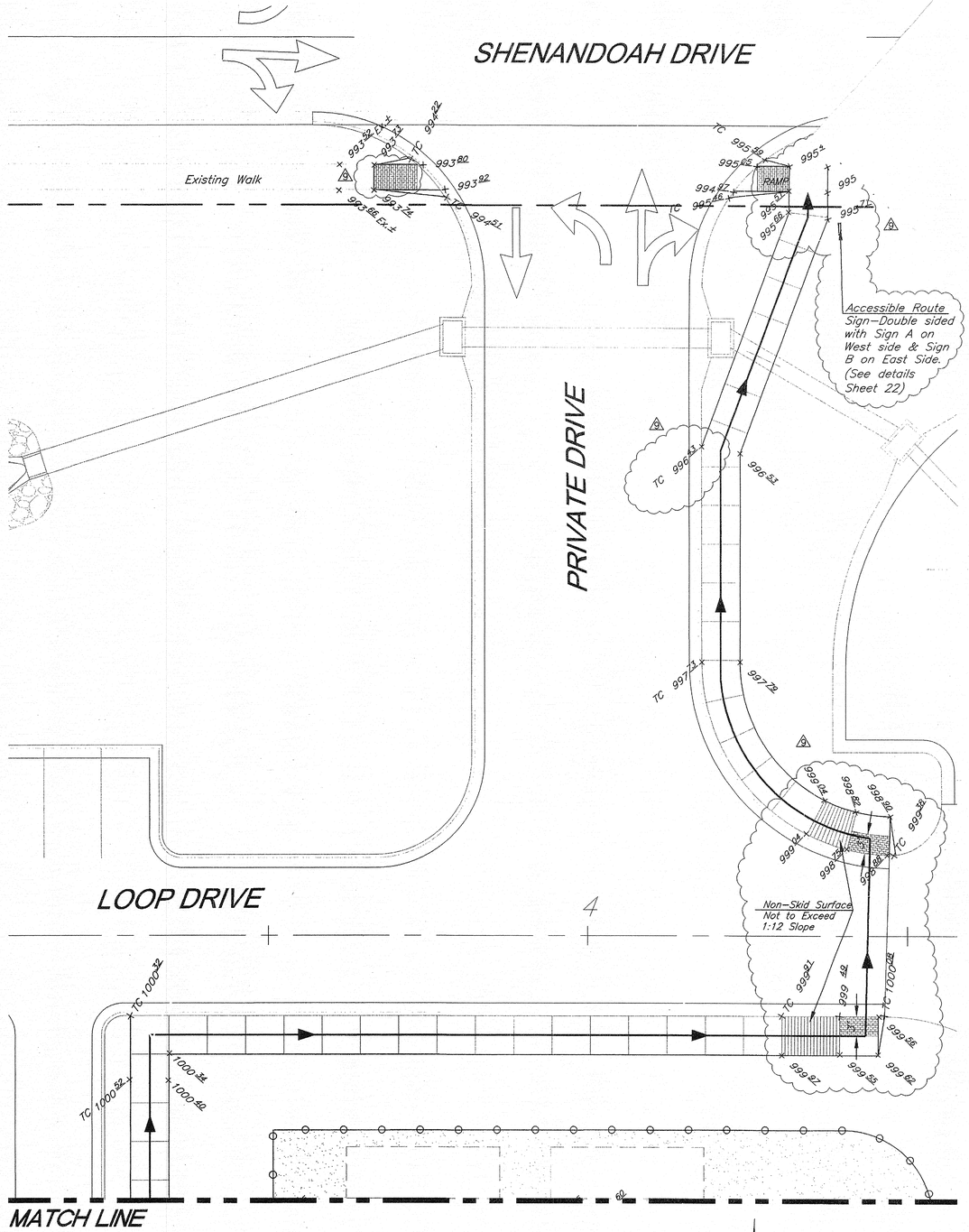
Storm Drainage Calculations

SHEET NUMBER
20 of 29



Accessible Route To Shenanndoah

Note: See Sheet 23 for Site Accessibility Construction Notes.



Accessible Route To Shenanndoah (Continued)

Note: See Sheet 23 for Site Accessibility Construction Notes.

LEGEND

- ADA Accessible Route
- TC 1004.31+ — Top of Curb Elevation
- 1004.35+ — Spot Elevation
- Type CG–1A Curb
- Type CG–1A Dry Curb
- Detectable Warning Pavers
- Curb Tansition Zone
- End ADA Accessible Route

10' 0' 10' 20'

SCALE : 1 INCH = 10 FEET

Site Accessible Route Enlargements

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway

Southeast Corner of Todd George Road and Shenandoah Drive

Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25607
REGISTERED PROFESSIONAL ENGINEER
10/23/06

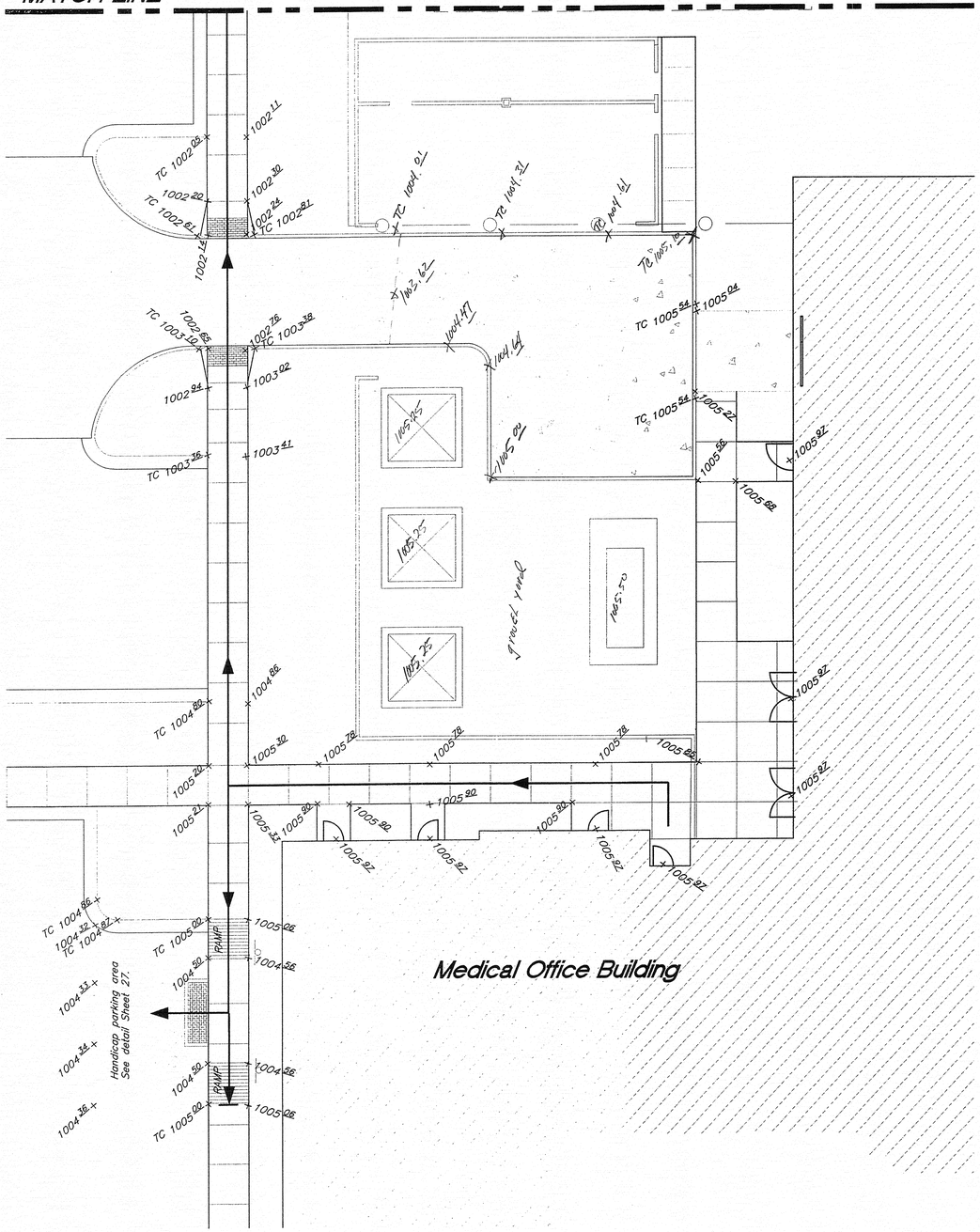
PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 – 06/02/06
Revised – RFI #100 – 07/25/06
ASI #7 – 10/20/06

DESIGNED
J.W.M.
DRAWN
J.W.M.
REVIEWED
B.D.B

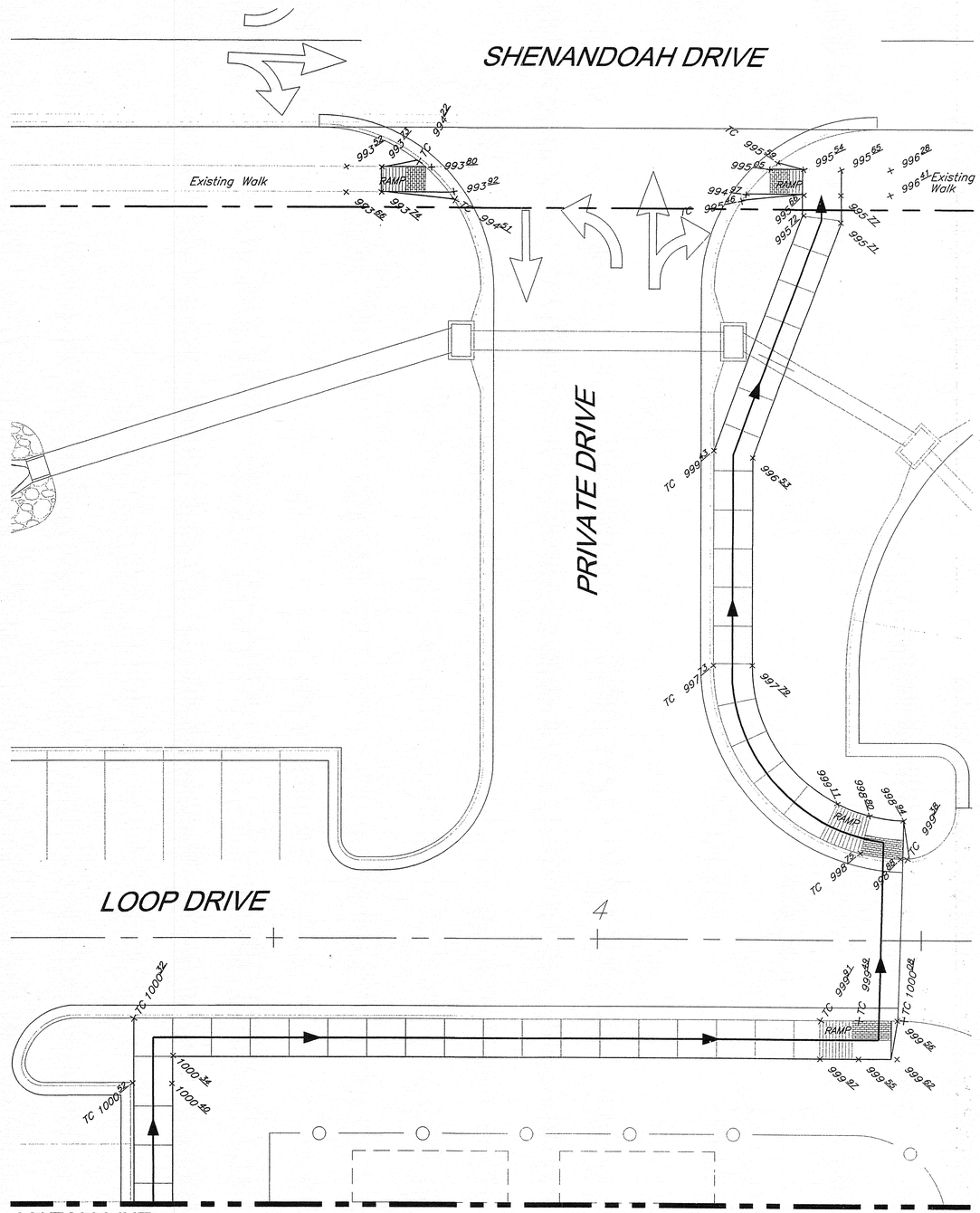
SHEET TITLE
Site Accessible Route Enlargements

SHEET NUMBER
21 of 29



Accessible Route To Shenanndoah

Note: See Sheet 23 for Site Accessibility Construction Notes.



Accessible Route To Shenanndoah (Continued)

Note: See Sheet 23 for Site Accessibility Construction Notes.

LEGEND

- ADA Accessible Route
- TC 1004.31+ — Top of Curb Elevation
- 1004.35+ — Spot Elevation
- Type CG-1A Curb
- Type CG-1A Dry Curb
- Detectable Warning Pavers
- Curb Tansition Zone
- End ADA Accessible Route

10' 0' 10' 20'

SCALE : 1 INCH = 10 FEET

Site Accessible Route Enlargements

GEORGE BUTLER ASSOCIATES, INC.
Engineers • Architects
Kansas • Missouri • Illinois
One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219-9745
(913) 492-0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

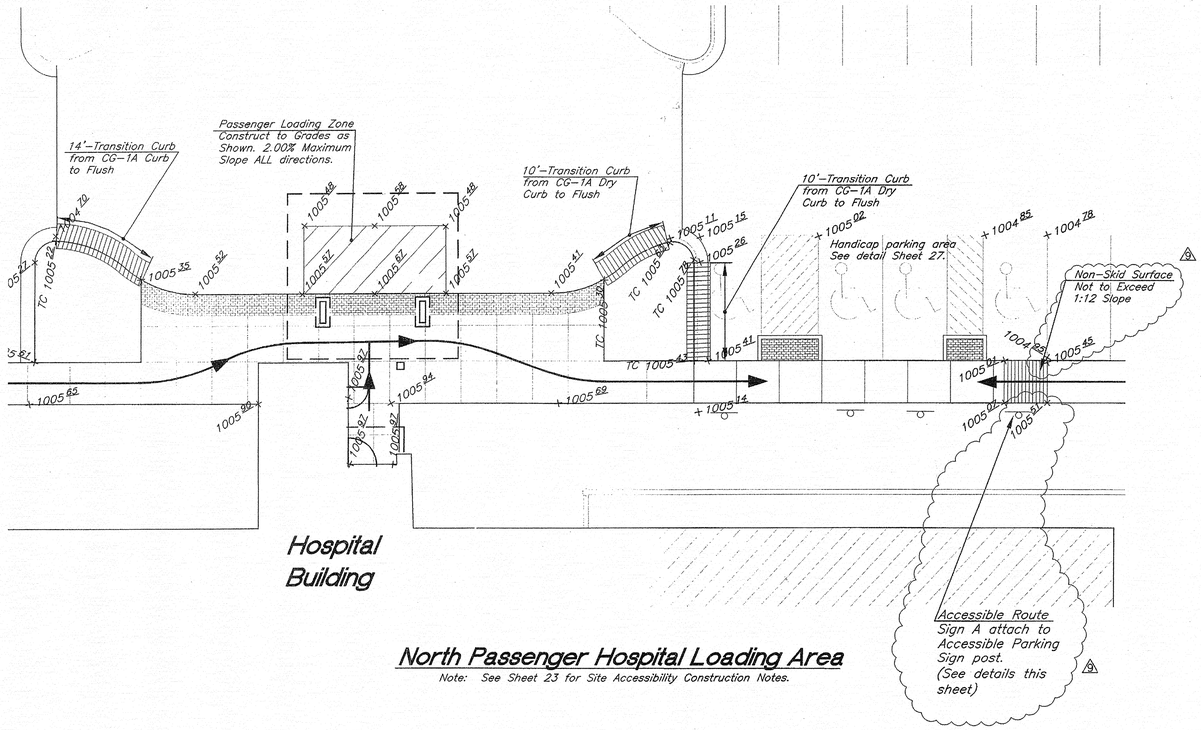
STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-26882
REGISTERED PROFESSIONAL ENGINEER
6/2/06

PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 - 06/02/06

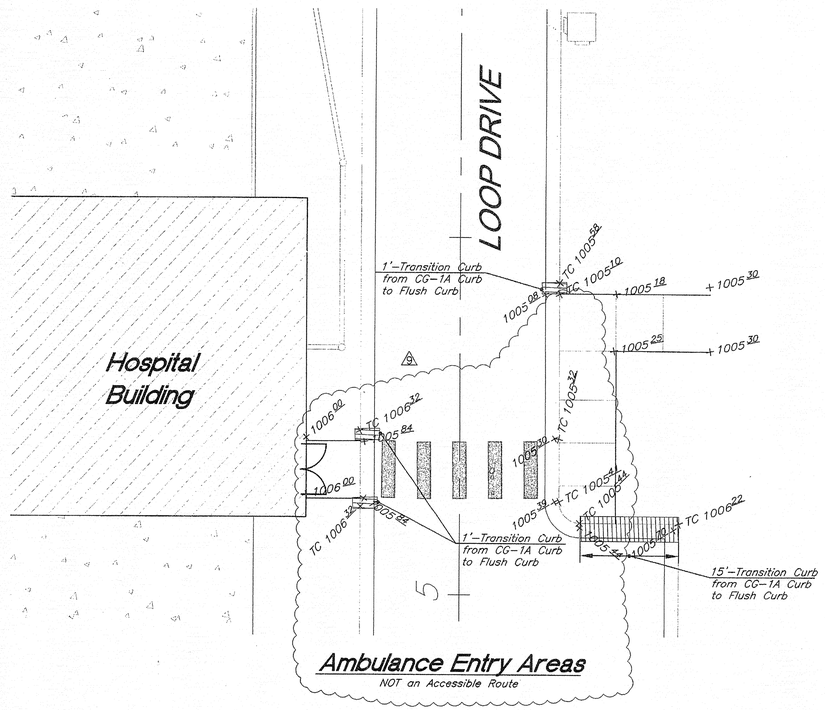
DESIGNED
J.W.M.
DRAWN
J.W.M.
REVIEWED
B.D.B
SHEET TITLE
Site Accessible Route Enlargements

SHEET NUMBER
21 of 29



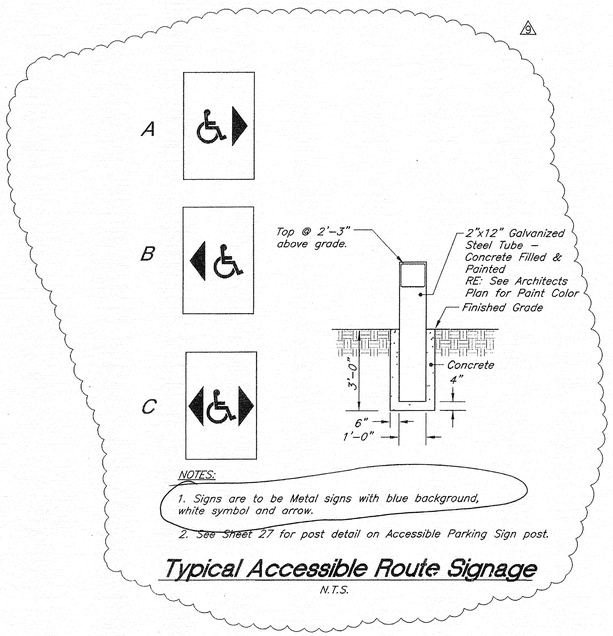
North Passenger Hospital Loading Area

Note: See Sheet 23 for Site Accessibility Construction Notes.



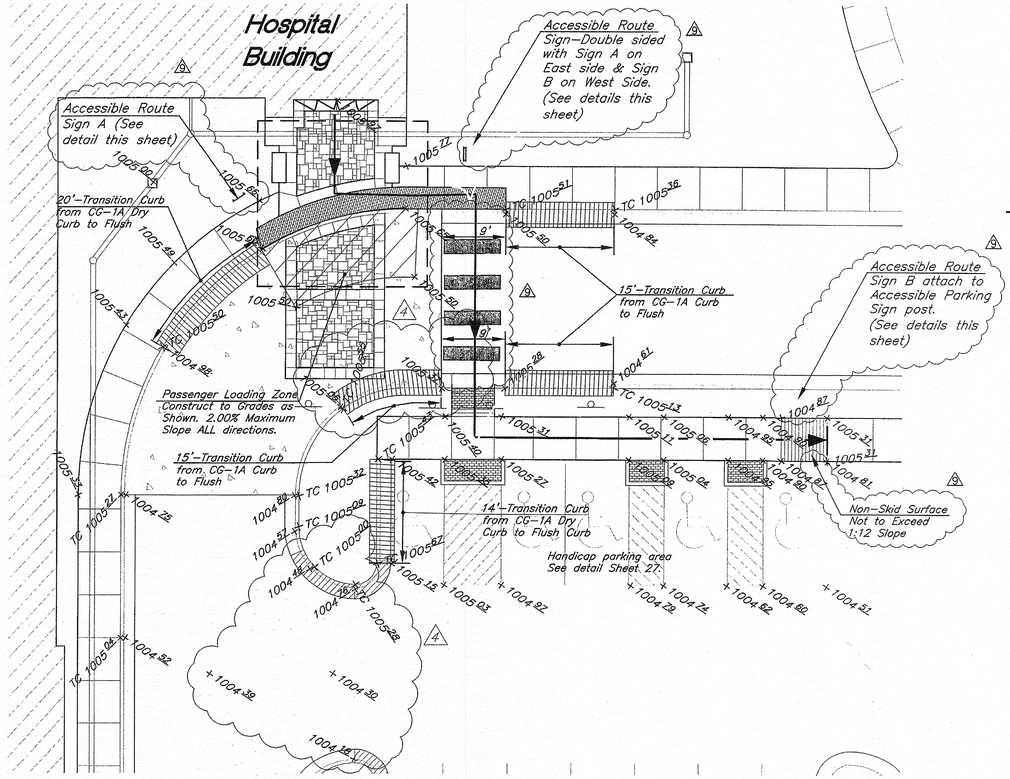
Ambulance Entry Areas

NOT an Accessible Route



Typical Accessible Route Signage

N.T.S.



Emergency Entrance

Note: See Sheet 23 for Site Accessibility Construction Notes.

LEGEND

- ADA Accessible Route
- TC 1004.31+ Top of Curb Elevation
- 1004.35+ Spot Elevation
- Type CG-1A Curb
- Type CG-1A Dry Curb
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- Curb Tansition Zone
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10' 0' 10' 20'

SCALE : 1 INCH = 10 FEET

Site Accessible Route and Ambulance Entry Enlargements

GEORGE BUTLER ASSOCIATES, INC.
Engineers • Architects
Kansas • Missouri • Illinois
One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219-9745
(913) 492-0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-23862
REGISTERED PROFESSIONAL ENGINEER
10/23/06

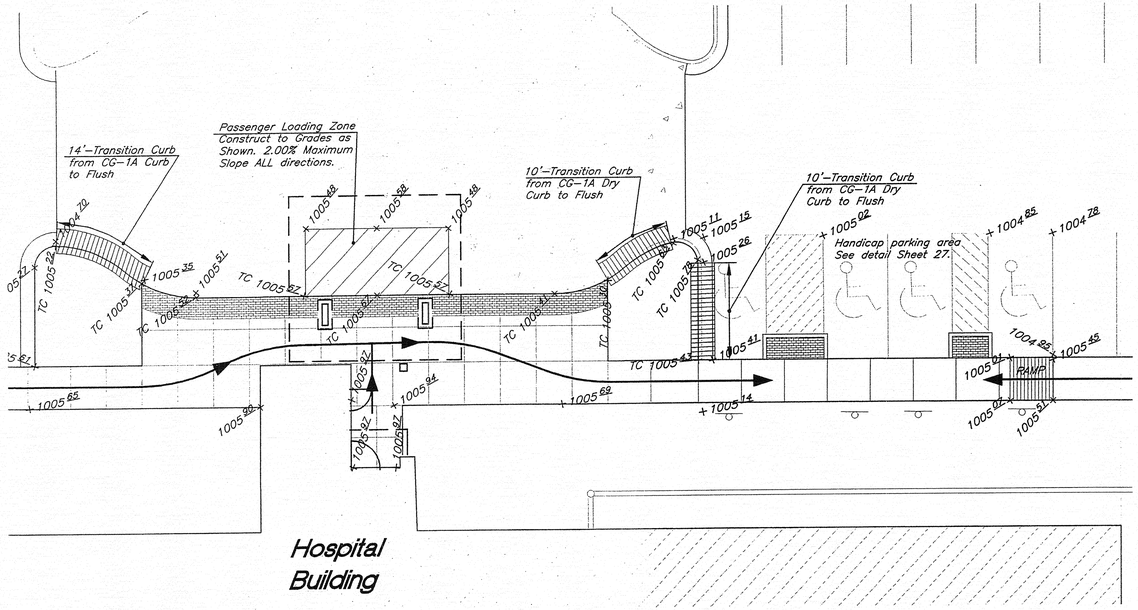
PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 - 06/02/06
4 Revised per RFI #093 - 07/18/06
5 ASI #7 - 10/20/06

DESIGNED
J.W.M.
DRAWN
J.W.M.
REVIEWED
B.D.B

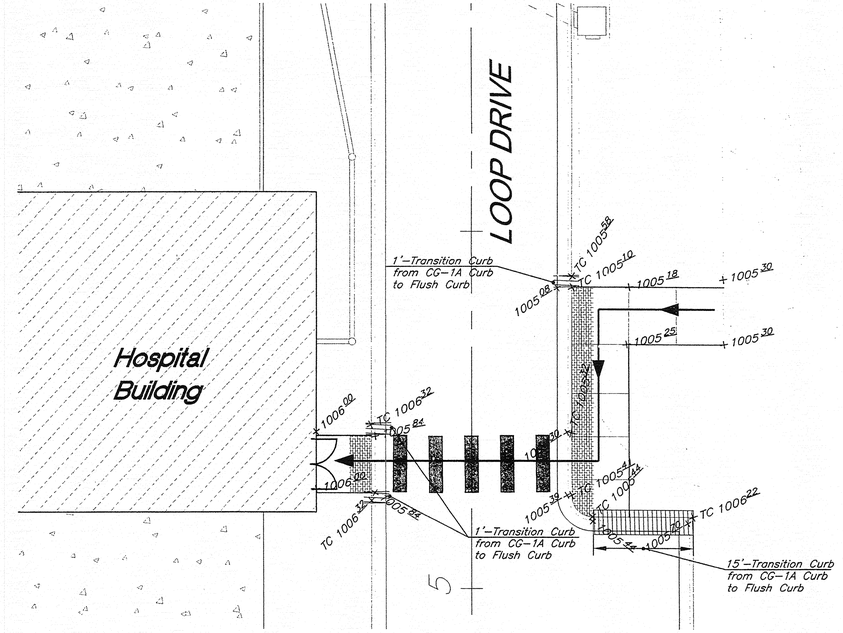
SHEET TITLE
Site Accessible Route and Ambulance Entry Enlargements 5

SHEET NUMBER
22 of 29



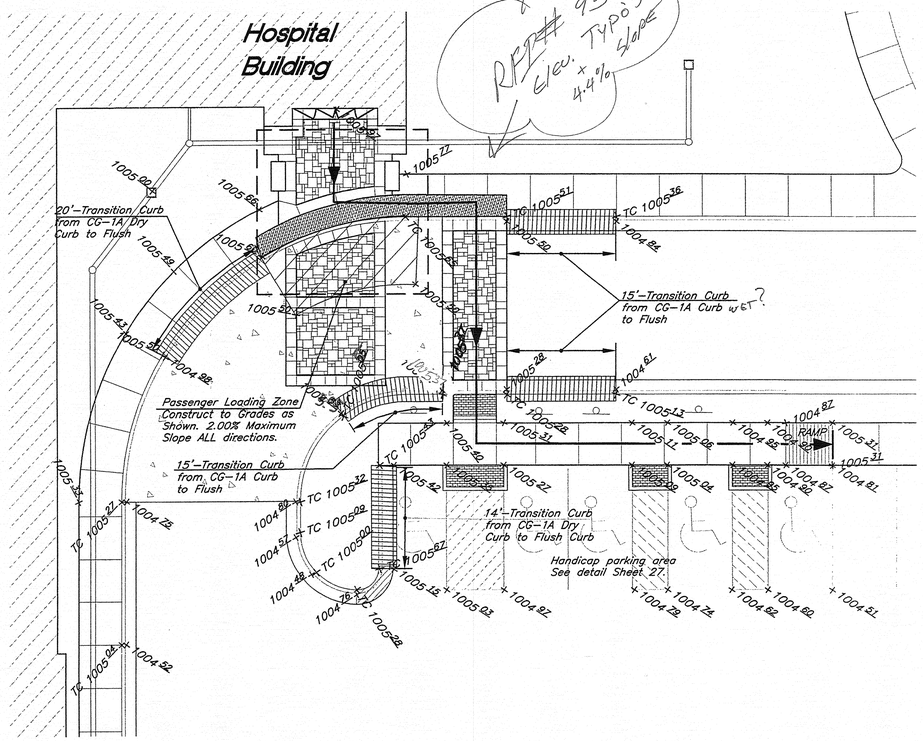
North Passenger Hospital Loading Area

Note: See Sheet 23 for Site Accessibility Construction Notes.



Ambulance Entry Areas

Note: See Sheet 23 for Site Accessibility Construction Notes.



Emergency Entrance

Note: See Sheet 23 for Site Accessibility Construction Notes.

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- Curb Tansition Zone
- End ADA Accessible Route

10' 0' 10' 20'

SCALE : 1 INCH = 10 FEET

Site Accessible Route Enlargements

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Lenexa, Kansas 66219-9745
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Site Construction Plans for:

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Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-26862
REGISTERED PROFESSIONAL ENGINEER
6/2/06

PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 – 06/02/06

DESIGNED
J.W.M.
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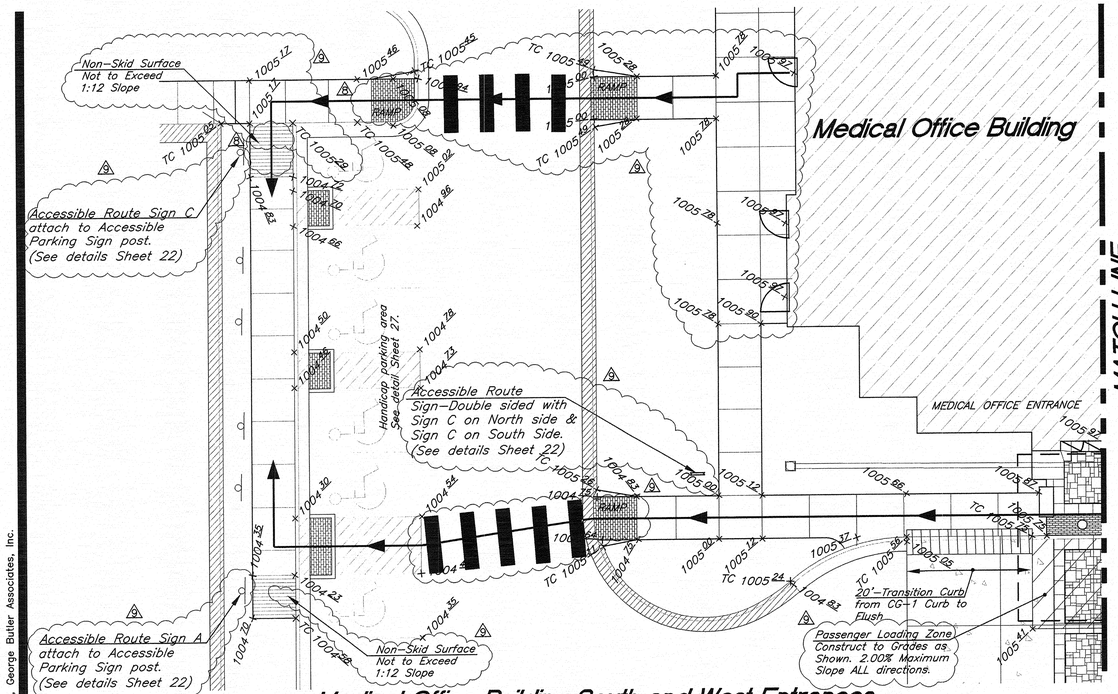
J.W.M.
REVIEWED
B.D.B

SHEET TITLE
Site Accessible Route Enlargements

SHEET NUMBER
22 of 29



Medical Office Building South and West Entrances

Site Accessibility Construction Notes:

General Accessibility Notes

1. Site accessible construction shall comply to the following published codes: International Building Code, 2003 Edition, the American National Standard (ANSI) ICC/ANSI 117.1–1998 "Accessible and Usable Buildings and Facilities" and the 1994 Americans with Disabilities Act Accessibility Guidelines. In the event of ANY instances of code overlap or inconsistency, the more stringent code shall apply.
2. Contractor shall notify the engineer immediately if he or she believes that the grades or lines shown or depicted in these construction documents do not comply with established ADA criteria.
3. Contractor shall check compliance of installed work with a 2 foot long level. Contractor shall anticipate that an owners representative may check compliance of the work, and that such compliance will be checked with a level no longer than 2 feet. Grades appearing acceptable with a level or similar device longer than 2 feet may be deemed non–compliant.
4. Unless otherwise noted, the curb transition occurring between raised curb and flush curb shall be 20 feet in length.

The following interpretations of the above referenced codes have been made for this project.

Accessible Parking Stalls

1. Accessible Car and Van parking spaces shall be 96 inches (8 feet) wide minimum and shall have an adjacent access aisle.
2. Access Aisles serving car parking spaces shall be 60 inches (5 feet) wide minimum. Access Aisles serving van parking spaces shall be 96 inches (8 feet) wide minimum. Access aisles shall be marked so as to discourage parking in them.
3. Parking spaces and aisles shall have surface slopes not steeper than 2.00% in ANY direction. Access aisles shall be at the same level as the parking spaces they serve.
4. All accessible parking spaces shall have wheel stops as shown in the handicap parking detail. (See Sheet 27 of these plans). 9

Passenger Loading Zones (PLZ)

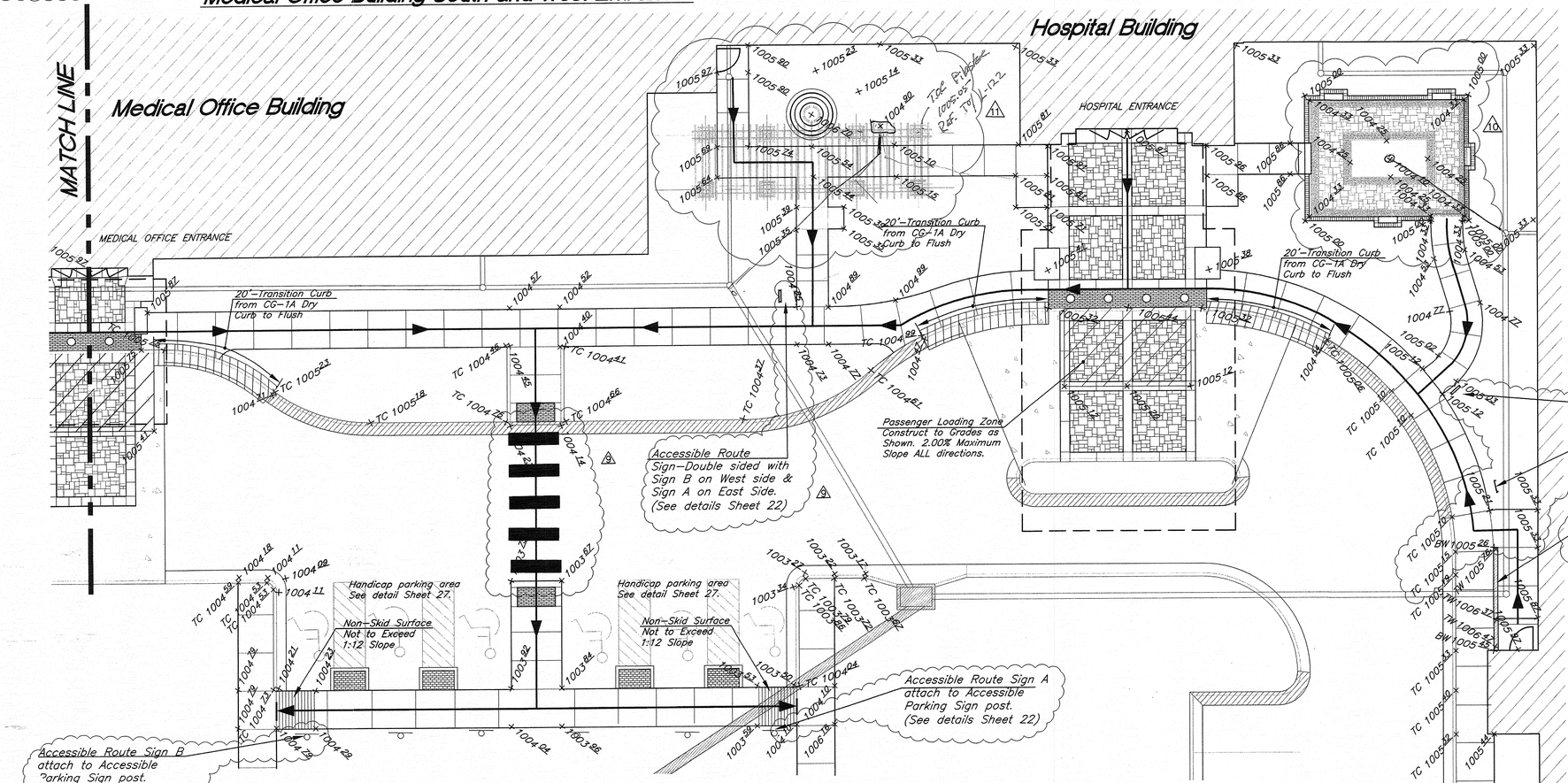
1. Passenger loading zones shall provide an accessible access aisle adjacent and parallel to a vehicle pull–up space.
2. Access aisle serving the vehicle pull–up space shall be 60 inches (5 feet) wide minimum.
3. Access aisles shall be 20 feet long minimum and shall be marked so as to discourage parking in them. 9
4. Vehicle pull–up spaces in passenger loading zones and access aisles shall have surfaces slopes not steeper than 2.00% in any direction. Access aisles shall be at the same level as the vehicle pull–up space they serve. The passenger loading zone shall be a minimum of 8' x 20' with 2% maximum slope in ALL directions.

Accessible Routes

1. The running slope of walking surfaces of an accessible route shall not be steeper that 5.00%. The cross slope of a walking surface of an accessible route shall not be steeper than 2.00%.
2. Walking surface on accessible routes with a running slope steeper that 5.00% are ramps and should be constructed in accordance with ADA requirements for ramps.
3. Ramps shall not have a running slope steeper than 8.33%. The cross slope of ramp runs shall not be steeper than 2.00%. The maximum rise for any ramp run shall be 30 inches. Ramps shall have landings at the bottom and top of each run. Ramps with a rise greater than 6 inches shall have handrails complying with established ADA criteria. Handrails are not required on curb ramps. 9
4. Where an accessible route makes a 90 degree corner or turn, the cross slope of the route shall not exceed 2.00% in ANY direction. This cross–slope is required for minimum dimensions of 5'x5' at corner or turn."

Detectable Warnings

1. Detectable warnings shall consist of truncated domes. Detectable warning surfaces shall contrast visually with adjacent walking surfaces either light–on–dark, or dark–on–light.
2. Truncated domes in a detectable warning surface shall have a center–to–center spacing of 1.6 inches minimum and 2.4 inches maximum, and a base–to–base spacing of 0.65 inch minimum, measured between the most adjacent square domes on a square grid.



Medical Office Building and Hospital South Entrance

Site Accessible Route Enlargements

LEGEND

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SCALE : 1 INCH = 10 FEET

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Site Construction Plans for:

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LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E–25862
REGISTERED PROFESSIONAL ENGINEER

PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 – 06/02/06
9 ASI #7 – 10/20/06
10 RFI #349 – 4/5/07
11 RFI #355 – 4/12/07

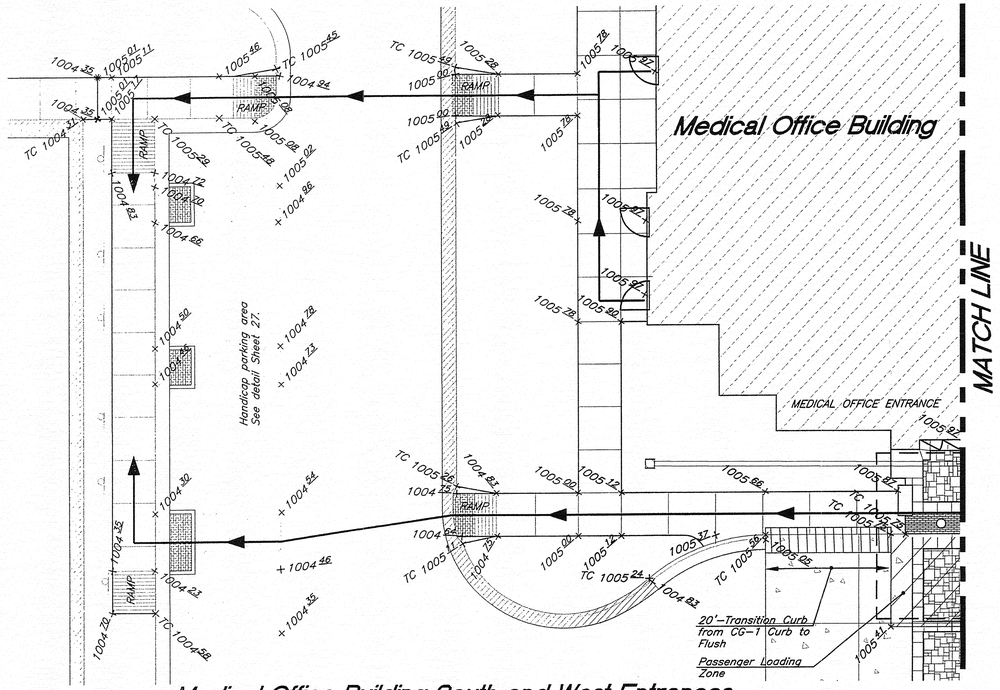
DESIGNED
J.W.M.

DRAWN
J.W.M.

REVIEWED
B.D.B

SHEET TITLE
Site Accessible Route Enlargements

SHEET NUMBER
23 of 29



Medical Office Building South and West Entrances

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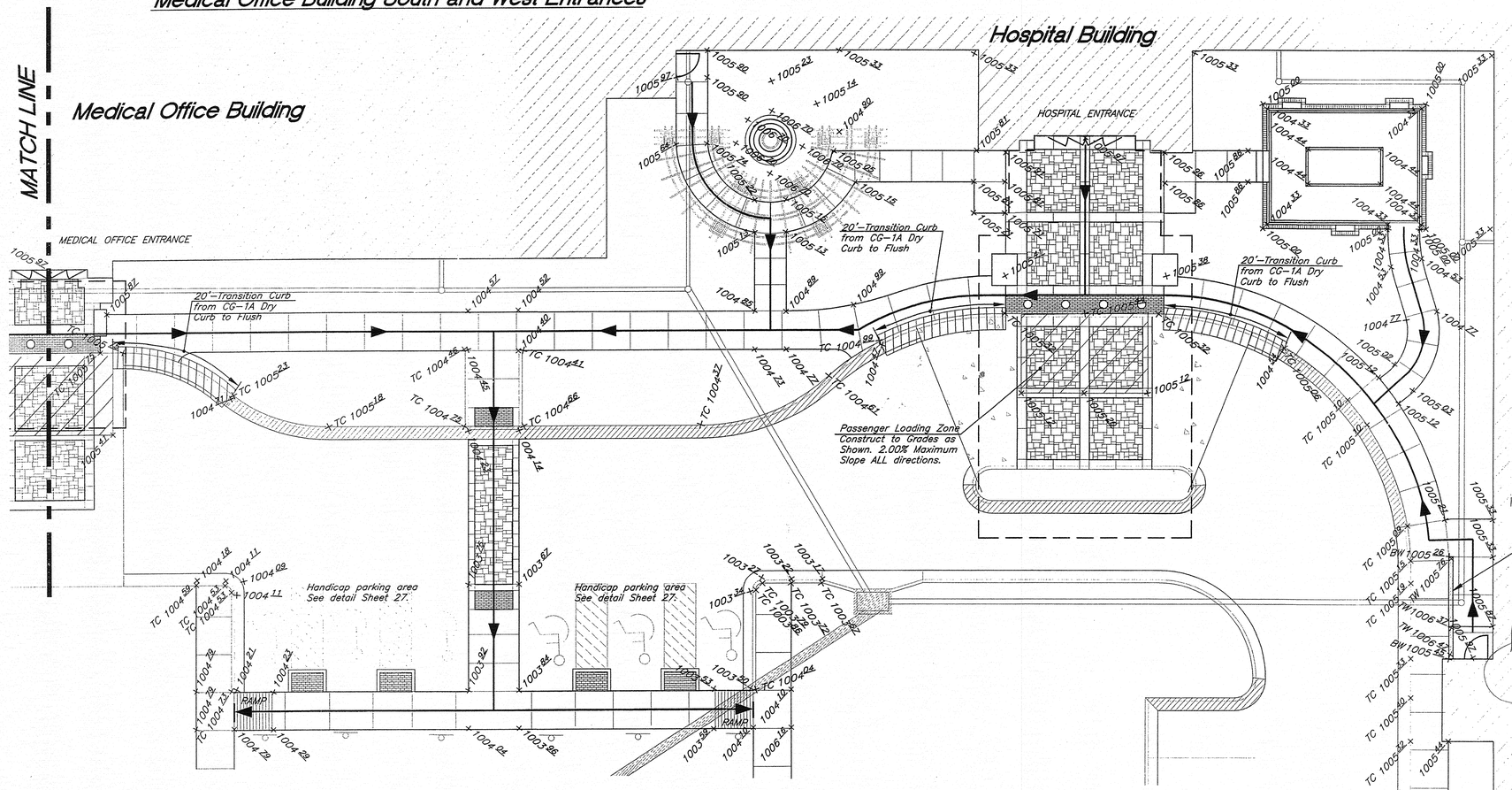
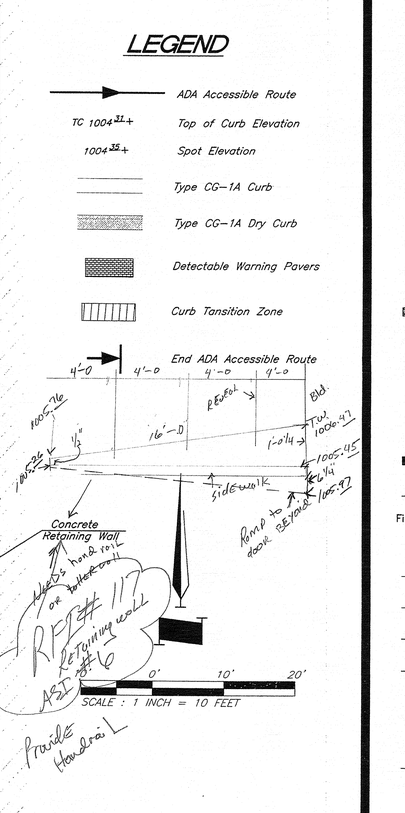


Medical Office Building and Hospital South Entrance



Site Accessible Route Enlargements

GBA
GEORGE BUTLER ASSOCIATES, INC.
Engineers • Architects
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One Renner Ridge
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Site Construction Plans for:

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Southeast Corner of Todd George Road and Shenandoah Drive
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STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25862
REGISTERED PROFESSIONAL ENGINEER
6/2/06

PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 – 06/02/06

DESIGNED
J.W.M.
DRAWN
J.W.M.
REVIEWED
B.D.B

SHEET TITLE
Site Accessible Route Enlargements

SHEET NUMBER
23 of 29

G:\10367\10367Ldd1.dwg\Civil\Site Construction Documents\10367C4024.dwg Layout: 24 Erosion Control Plan -- Friday June 02, 2006, 3:47pm

L=377.41'
R=1802.00'
△ = 12°00'00"

ASHTON DRIVE

SHENANDOAH DRIVE

S 87°41'11" E - 738.82'

Detention Basin

Building Setback Line

Silt Fence (Typical)

Proposed Excess Flow Holding Basin (Per Separate Plans)

Gravel Bags (Typical)

Gravel Bags (Typical)

Detention Basin B

Proposed Hospital Building F.F. 1006.00

S 02°13'32" W - 833.42'

20' Building Setback Line

WARNING: EXISTING WETLANDS (Disturb ONLY as shown in these plans)

Silt Fence (Typical)

Gravel Bags (Typical)

Silt Fence (Typical)

Detention Basin A

Gravel Bags (Typical)

Gravel Bags (Typical)

N87°51'28"W 164.04'

N 80°54'24" W 82.63'

'37"W '9"

N 87°51'28" W - 811.95'

Silt Fence (Typical)

20' Building Setback Line

SE BLUE PARKWAY

U.S. 50 HIGHWAY

50' 0' 50' 100'

SCALE : 1 INCH = 50 FEET

LEGEND

- Silt Fencing
- Gravel Bags
- Rip-Rap

EROSION CONTROL NOTES

1. Except where necessary to install erosion and sediment control devices, clearing activities shall not begin until all erosion and sediment control devices have been installed and the soil has been stabilized.

2. The Contractor shall provide for control of surface erosion and sediment deposition during all phases of construction and until the owner accepts the work as complete. The Contractor shall provide temporary seeding, berms, silt fence, sediment traps, rock dam ditch checks, surface roughening or other means to prevent sediment from reaching the public right-of-way, streams or adjacent property. In the event the prevention measures are not effective, the contractor shall remove any debris sediment and restore the right-of-way and adjacent property to it's original or better condition.

3. Contractor is responsible for keeping all public roadways adjacent to the construction site free of dirt and debris resulting from activities related to the construction of this project.

4. Contractor must install and maintain the erosion control measures shown on these plans. If the City or the Engineer determines that the installation or the maintenance is inadequate, the contractor must immediately correct at his expense. If it is determined that additional erosion control measures are needed the contractor will be directed to install and maintain those measures.

5. The contractor shall inspect the erosion control measures at least once every seven (7) days and within twenty-four (24) hours following each rainfall event of 1/2" or more within any twenty-four (24) hour period. The contractor shall also inspect and assure that all sediment control devices are in working condition prior to any forecasted rainfall.

6. The Contractor shall temporarily seed all disturbed areas if there has been no construction activity on them for a period of 14 calendar days.

7. Following the final removal of all erosion control measures the Contractor shall re-grade and re-seed all areas that were disturbed by the removal.

8. The contractor shall seed or hydro seeded in accordance with city specification for seeding and/or hydroseeding.

Seed mixture to be winter wheat or winter ryegrass sowed at an application rate of 150lbs. per acre. The seeded areas shall be inspected by the Engineer two to four weeks after seeding for adequate seed germination, erosion control and weed control.

Repairs and reseeding shall be performed by the contractor at the direction of the engineer at no additional cost. If vegetative measures are not effective within this time frame, Contractor may be required to reseed or employ a non-vegetative option to stabilize the disturbed area.

9. The Contractor shall surface roughen all slopes steeper than 8:1 on site. Surface roughening by the Contractor shall be performed after the slopes have been graded and dressed. Acceptable methods of surface roughening are:

Cut Slopes: Tilling, disking, and harrowing running across the slope and on the contour with grooves less than 10 inches apart and not less than 1" deep.

Fill Slopes: Use tracking with tracked machinery up and down the slope to leave horizontal depressions in the soil. Each pass should move across the slope gradually leaving a continuous tracking pattern. Apply fertilizer, mulch, topsoil or other soil amendments as necessary prior to tracking. Do not blade or scrape the final slope face.

10. Sediment Basin Maintenance - This Contractor is responsible for continuous maintenance of all sediment basins shown on these plans for the duration of this contract. Periodic sediment removal will be necessary to keep outlet pipes and overflow structures functioning properly. Immediately prior to acceptance of this work the Contractor shall perform a final cleaning of all basins. Sediments form basins shall be dried and placed in on-site embankments.

Erosion Control Plan

GBA
GEORGE BUTLER ASSOCIATES, INC.
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One Renner Ridge
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Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway

Southeast Corner of Todd George Road and Shenandoah Drive

Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-26562
LICENSED PROFESSIONAL ENGINEER
6/1/06

PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 -- 06/02/06

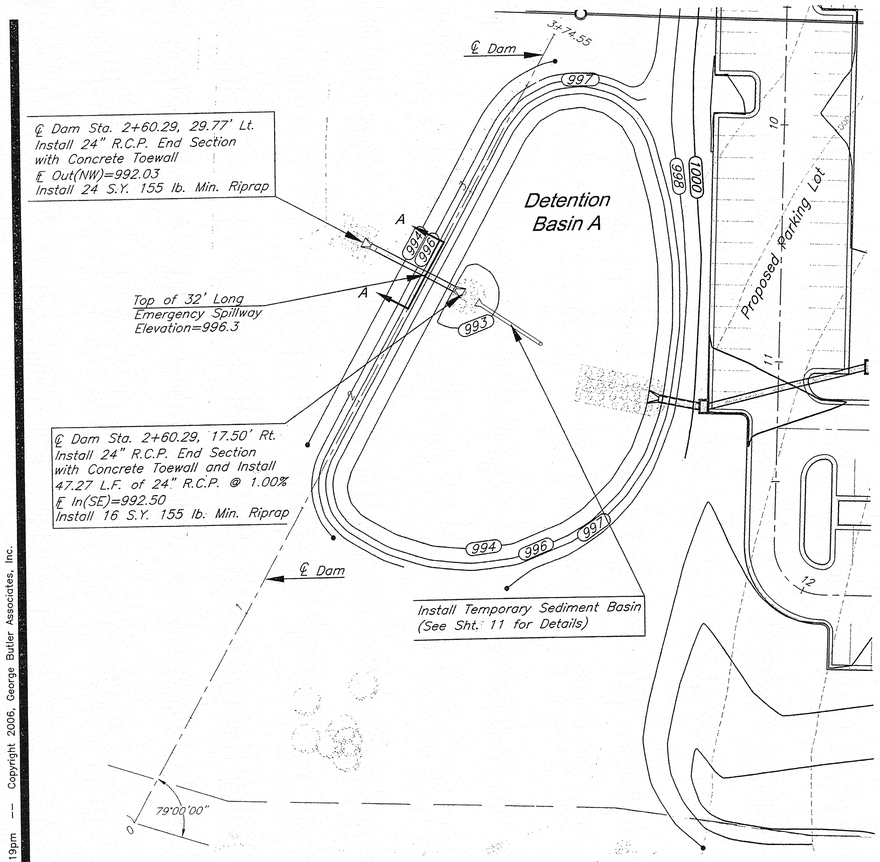
DESIGNED
J.W.M.

DRAWN
J.W.M.

REVIEWED
B.D.B.

SHEET TITLE
Erosion Control Plan

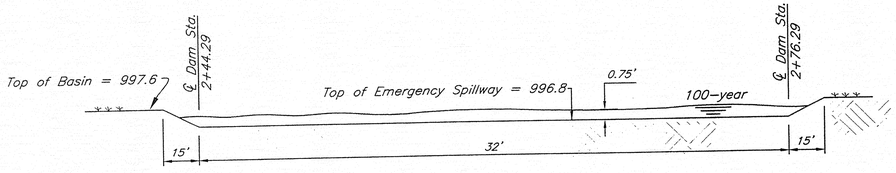
SHEET NUMBER
24 of 29



STAGE	STORAGE (ac.-ft.)	OUT FLOW (cfs)
992.5	0.01	0
994	0.20	7.1
996	0.98	26
997	1.42	30

STORM FREQUENCY	PEAK INFLOW (cfs)	PEAK OUT FLOW (cfs)	STORM VOLUME (ac.-ft.)	MAX. WATER SURFACE ELEV.
2	27	12	0.41	994.58
10	43	19	0.69	995.31
100	65	26	1.09	996.25

$Q_{100}=CLH^{3/2}$ (C=3.1 Broad Crested Weir) L=32' $H=\left(\frac{Q_{100}}{CL}\right)^{2/3}=\left(\frac{65\ cfs}{3.1\ (32')}\right)^{2/3}=0.75'$

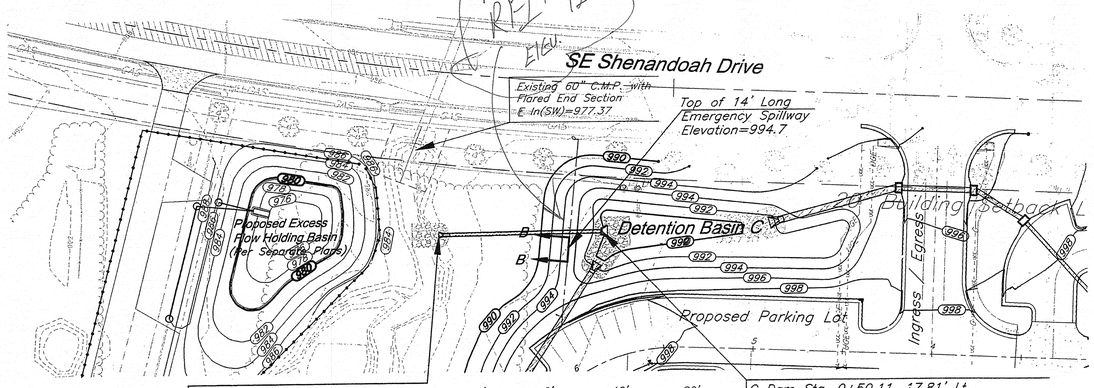


Emergency Spillway
No Scale
SECTION A–A

Detention Basin A

Drainage Area Name	Drainage Area (ac.)	Curve Number (CN)		Time of Concentration (mins.)		2-Yr. Peak Runoff (cfs)		10-Yr. Peak Runoff (cfs)		100-Yr. Peak Runoff (cfs)	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Watershed A	7.11	71	93	15.6	6.0	8.3	27	19	58	35	65
Watershed C	3.10	71	93	9.0	6.0	4.7	12	11	19	19	28

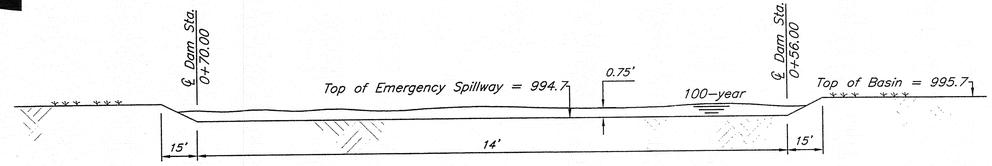
NOTE:
Detention Basin calculations shown here are for the final constructed configuration of the storm water detention basins once sediment ponds are removed at a later date.



STAGE	STORAGE (ac.-ft.)	OUT FLOW (cfs)
989	0.01	0
990	0.01	3.7
992	0.09	8.0
994	0.28	11
995	0.42	12

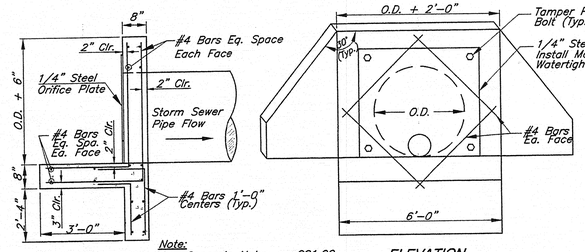
STORM FREQUENCY	PEAK INFLOW (cfs)	PEAK OUT FLOW (cfs)	STORM VOLUME (ac.-ft.)	MAX. WATER SURFACE ELEV.
2	12	7.8	0.08	991.86
10	19	9.6	0.19	993.17
100	28	12	0.37	994.66

$Q_{100}=CLH^{3/2}$ (C=3.1 Broad Crested Weir) L=14' $H=\left(\frac{Q_{100}}{CL}\right)^{2/3}=\left(\frac{28\ cfs}{3.1\ (14')}\right)^{2/3}=0.75'$



Emergency Spillway
No Scale
SECTION B–B

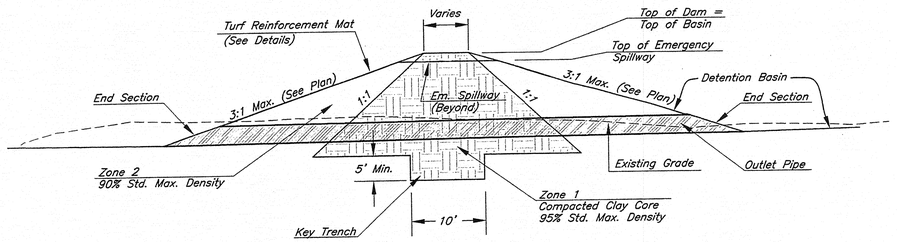
Detention Basin C



SECTION ELEVATION

Note: See Concrete Notes on C21.00.

CONCRETE HEADWALL DETAIL
No Scale



Typical Detention Basin Dam Construction Detail
No Scale

GENERAL NOTES:

1. All construction shall be carried to line, grades, and dimensions shown on the drawings.

2. Entire footprint area of the dam embankment foundation shall be stripped to a minimum depth of 12" or to bedrock. If limestone is present, within the basin area, the limestone shall be undercut a minimum of 2 feet below the basin area and planned embankment. If large joints or clay seams are found during excavation the contractor shall obtain recommendations from the project geotechnical engineer to approve additional remedial procedures, if needed. This foundation preparation shall consist of clearing and grubbing all vegetation, as well as stripping the area of all organic topsoils. The area shall then be scarified to a depth of at least 6" and compacted with sheepsfoot roller prior to any embankment construction.

3. The cutoff trench shall be constructed along the centerline of the dam and extend to the elevation of the top of dam elevation. The cutoff trench shall extend through the soil mantel and weathered zone of the bedrock to a solid, intact limestone, suitable shale or clay; a minimum 5–foot depth trench is expected to be sufficient. Prior to placement of clay fill in the cutoff trench, the Engineer or his representative shall evaluate the excavation and if necessary, may require additional cut.

4. Zone I embankment shall consist of a mixture of inorganic lean clays (CL) and/or fat clays (CH) soils having a clay content of at least 25% and liquid limit of 45% to 65%. Zone I embankment includes the cutoff trench fill and the principal spillway backfill.

5. Fill for Zone I shall be placed in 6 to 8 inch thick horizontal lifts compacted to a minimum of 95% of the Standard Proctor (ASTM D–698) maximum dry density. The moisture content of the fill shall be maintained with a range of 0% to 4% above optimum moisture content during placement and compaction. Compaction of each layer shall be conducted in a systematic and continuous manner so as to ensure the specified density. Rolling shall be done, parallel to the dam profile wherever possible. The embankment shall be brought up in layers such that the surface is essentially level except for a slight slope for drainage.

6. Field density test will be performed by the Contractor to determine the degree of compaction achieved and the suitability of the materials incorporated into the embankment. The Contractor shall obtain the services of a qualified geotechnical testing firm, pre–approved by the Engineer, to monitor and test the fills. The Contractor shall adjust the compactive effort, material, or method of placement to achieve satisfactory results.

7. No fill shall be placed in adverse weather conditions or as determined by the Geo–technical Engineer. Frozen materials or soils containing organic material shall not incorporated into the dam sections.

8. The surfaces of the dam embankment shall be covered with no less than 6", nor more than 12" of topsoil measured vertically.

Detention Basin Details

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Kansas • Missouri • Illinois
One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219–9745
(913) 492–0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL–2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25867
REGISTERED PROFESSIONAL ENGINEER
6/2/06

PROJECT NUMBER
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DESIGNED
R.G.Z.
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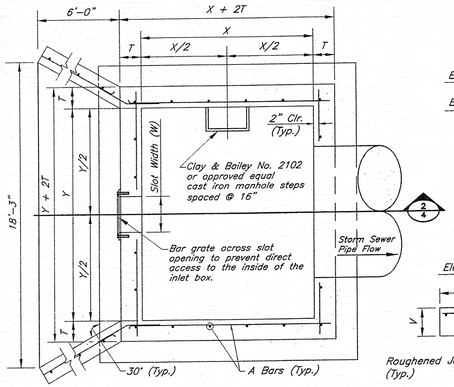
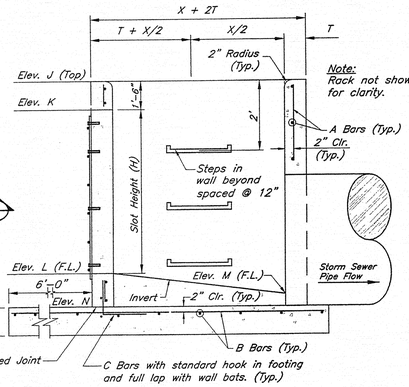
SHEET TITLE
Detention Basin Details

SHEET NUMBER
25 of 29

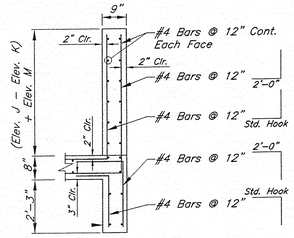


1/4 INLET PLAN
SCALE : NTS

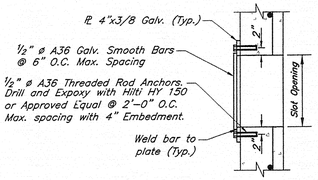


2/4 INLET SECTION
SCALE : NTS

All concrete shall be cast in place.
Precast Construction will not be allowed.



WINGWALL DETAIL
SCALE : NTS



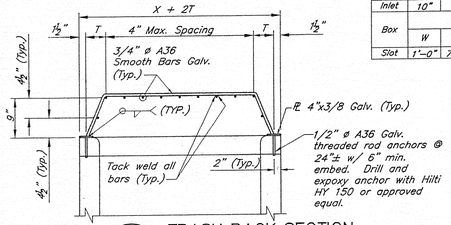
INLET GRATE DETAIL
SCALE : NTS

INLET DATA												
Box	DIMENSIONS				REINFORCEMENT			ELEVATIONS				
	T	V	X	Y	A BARS	B BARS	C BARS	J	K	L	M	N
Inlet	10"	8"	6'-0"	11'-0"	#5 @ 6"	#5 @ 12"	#5 @ 12"	996.50	995.00	988.00	987.42	987.25

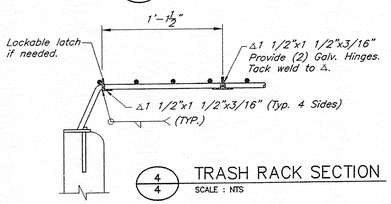
Box	DIMENSIONS			
	W	H		
Slot	1'-0"	7'-0"		

$Q_{100}=CLH^{3/2}$ (C=3.5 Sharp Crested Weir) $H=\left(\frac{Q_{100}}{CL}\right)^{2/3}=\left(\frac{70\ cfs}{3.5\ (34')}\right)^{2/3}=0.7'$

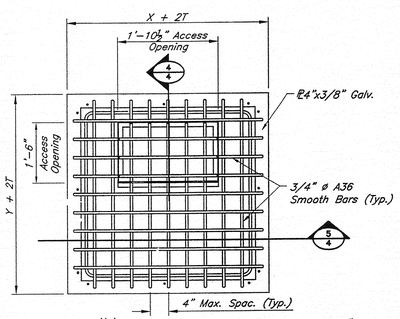
Q_{100}=70 cfs (100-year capacity of existing 48" C.M.P.)
Weir Perimeter Length (L)=34'



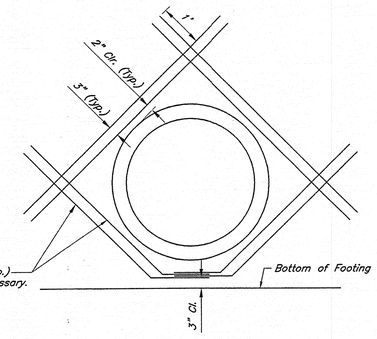
5/4 TRASH RACK SECTION
SCALE : NTS



4/4 TRASH RACK SECTION
SCALE : NTS



3/4 TRASH RACK PLAN
SCALE : NTS

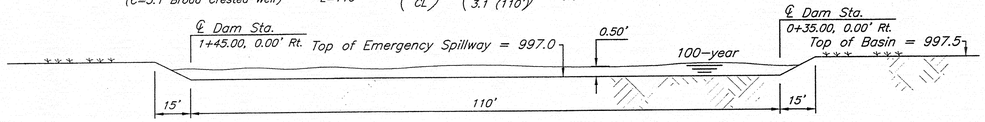


4/4 TYPICAL WALL PENETRATION REINFORCING DETAIL
SCALE : NTS

STAGE	STORAGE (ac.–ft.)	OUT FLOW (cfs)
988	0.01	0
990	0.15	8.8
992	0.73	25
994	1.67	46
996	2.80	72
997	3.44	79

STORM FREQUENCY	PEAK INFLOW (cfs)	PEAK OUT FLOW (cfs)	STORM VOLUME (ac.–ft.)	MAX. WATER SURFACE ELEV.
2	51	27	0.81	992.19
10	91	48	1.76	994.17
25	104	57	2.19	994.96
100	128	73	2.89	996.14

$Q_{100}=CLH^{3/2}$ (C=3.1 Broad Crested Weir) $L=110'$ $H=\left(\frac{Q_{100}}{CL}\right)^{2/3}=\left(\frac{121\ cfs}{3.1\ (110')}\right)^{2/3}=0.5'$



Emergency Spillway
No Scale
SECTION A–A

Detention Basin B

General

1. The Contractor shall notify the Engineer of any observed discrepancies in dimensions, detailing, or other items as shown on the plans or specified prior to proceeding with work relating to said discrepancies.
2. The Contractor shall not alter or modify work shown on the structural drawings without receiving written approval of the Engineer.
3. The Contractor shall be responsible for supplying shop drawings for reinforcing steel, epoxy grout and concrete mix design. Shop drawings must be reviewed for conformance with the means, methods, techniques, sequences, and operations of construction, and safety precautions and programs incidental thereto, all of which are the sole responsibility of the Contractor, and shall be stamped "approved" by the Contractor prior to submittal. Shop drawings submitted without the Contractor's stamped approval will be returned rejected. All shop drawings shall be reviewed by the Structural Engineer prior to construction.
4. The Lump Sum payment for the inlet, RCB, and draw–down pipe (including trash rack, Foundation Stabilization, railing, pipe and valves, etc.) shall be full compensation for furnishing, fabricating, welding, delivering, erecting, coating, placing all materials, all labor, equipment, tools, and incidentals necessary to properly complete the work.

Concrete and Reinforcing Steel:

1. Concrete mix designs shall meet the following requirements:
(Taken from ACI Manual of Concrete–1990, 211.1)

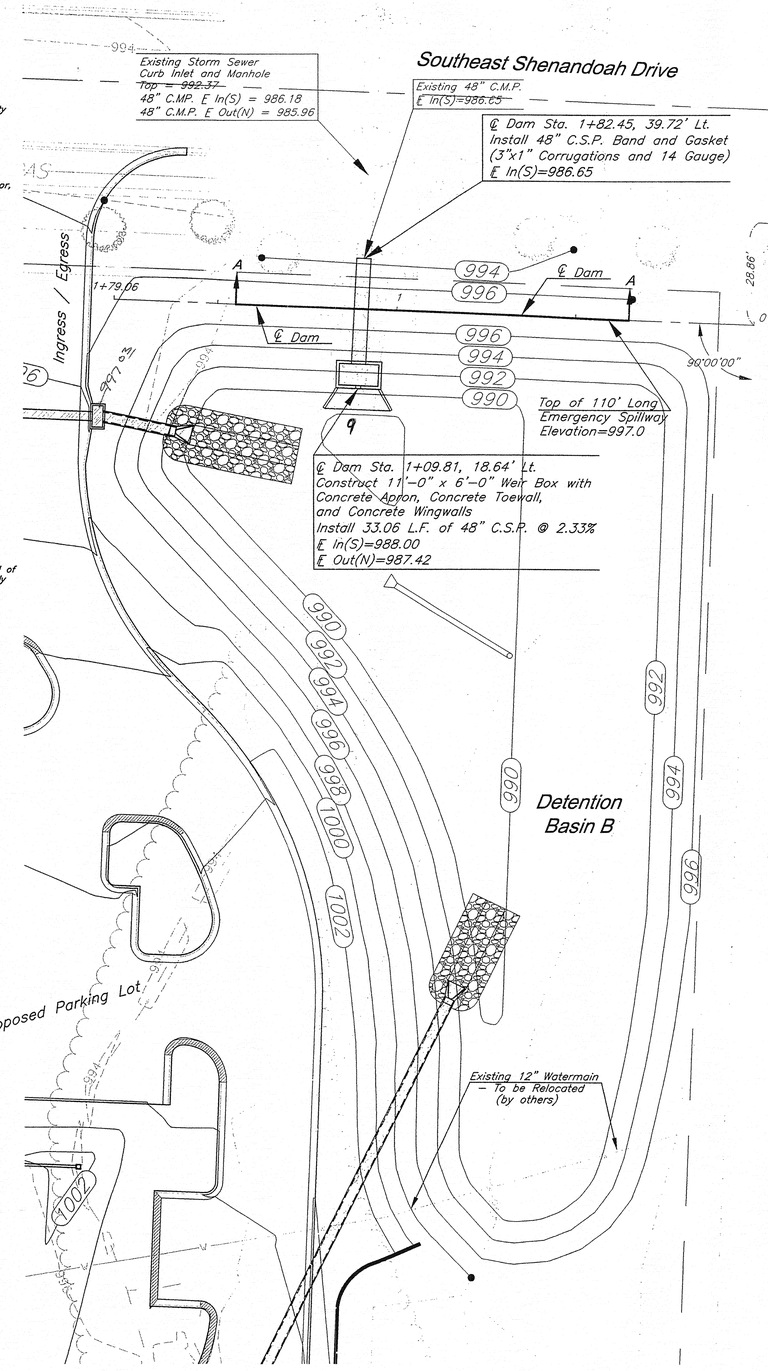
Minimum Compressive Strength (PSI)	Maximum Aggregate Size	Cement Lbs.	Sack Mix (Per C.Y.)	Max. Water/Cement Ratio	Max. Slump	Air Entrainment Percent (%)
4000	3/4"	600	6 1/2	0.48	4"	6 ± 1

Bevel all concrete edges with a 3/4" triangular moulding.
All concrete shall be square and level.

2. Fly ash may be used. Fly ash shall conform to ASTM C618 and not exceed 18%.
3. All concrete is reinforced unless specifically called out as unreinforced. Reinforce all concrete not otherwise shown with same steel as in similar sections or areas.
4. Reinforcing steel shall be continuous through construction joints unless noted otherwise.
5. No aluminum items shall be embedded in any concrete.
6. Reinforcing bars #4 and larger (except ties and stirrups) shall meet ASTM A615 with Supplementary Requirements (S1), Grade 60, smaller bars shall be Grade 40.
7. Concrete coverage of reinforcement shall have the following clear distance unless noted otherwise on the drawings:
Cast against earth ____ 3"
Formed concrete exposed to earth or weather ____ 2"
Not exposed to earth or weather ____ 1" Slabs, 1–1/2" Beams and columns
8. Bars marked continuous and all vertical steel shall be lapped or embedded to develop the full tensile capacity of the bar. Laps shall be as specified on design drawings. If no lap length is shown, contact the Engineer.
9. All bars are to be supported in forms and spaced with wire bar supports per ACI "Manual of Standard Practice for Detailing Concrete Structures" (latest edition). Bars shall be securely wired per latest edition of CRSI Recommended Practice for Placing Reinforcing Bars. Accessories for exposed concrete shall be plastic or have plastic–tipped feet.
10. Concrete placed during cold weather shall conform to the requirements of ACI 306R–88. Cold weather is defined as a period when for more than 3 successive days the mean daily temperature drops below 40°F.
11. Concrete placed during hot weather shall conform to the requirements of ACI 305R–89. Hot weather is defined as that combination of air temperature, concrete temperature, relative humidity and wind speed that will cause a rate of evaporation of 0.2 lb/sq.ft./hr. or more as defined by Figure 2.1.5 of ACI 305R–89.

Structural Steel:

1. All structural steel shall conform to the following:
Structural Steel – ASTM A36
Miscellaneous Steel – ASTM A36
2. Welding shall conform to the latest publication of applicable codes set forth by the American Welding Society. Welding electrodes shall be E70XX.



Drainage Area Name	Drainage Area (ac.)	Curve Number (CN)		Time of Concentration (mins.)		2–Yr. Peak Runoff (cfs)		10–Yr. Peak Runoff (cfs)		100–Yr. Peak Runoff (cfs)	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Watershed B	7.30	73	93	24.6	6.0	7.5	28	17	44	31	66
Off–Site Watershed B–1	16.66	65	65	30.0	30.0	8.7	8.7	25	25	52	52
Off–Site Watershed B–2	15.63	75	75	18.0	18.0	25	25	38	38	38	38

NOTE:
Detention Basin calculations shown here are for the final constructed configuration of the storm water detention basins once sediment ponds are removed at a later date.

20' 0' 20' 40'
SCALE : 1 INCH = 20 FEET

Detention Basin Details

GEORGE BUTLER ASSOCIATES, INC.
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Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL–2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E–25866
REGISTERED PROFESSIONAL ENGINEER
6/1/06

PROJECT NUMBER
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First Issue as: ASI #2 – 06/02/06

DESIGNED
R.G.Z.
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SHEET TITLE
Detention Basin Details

SHEET NUMBER
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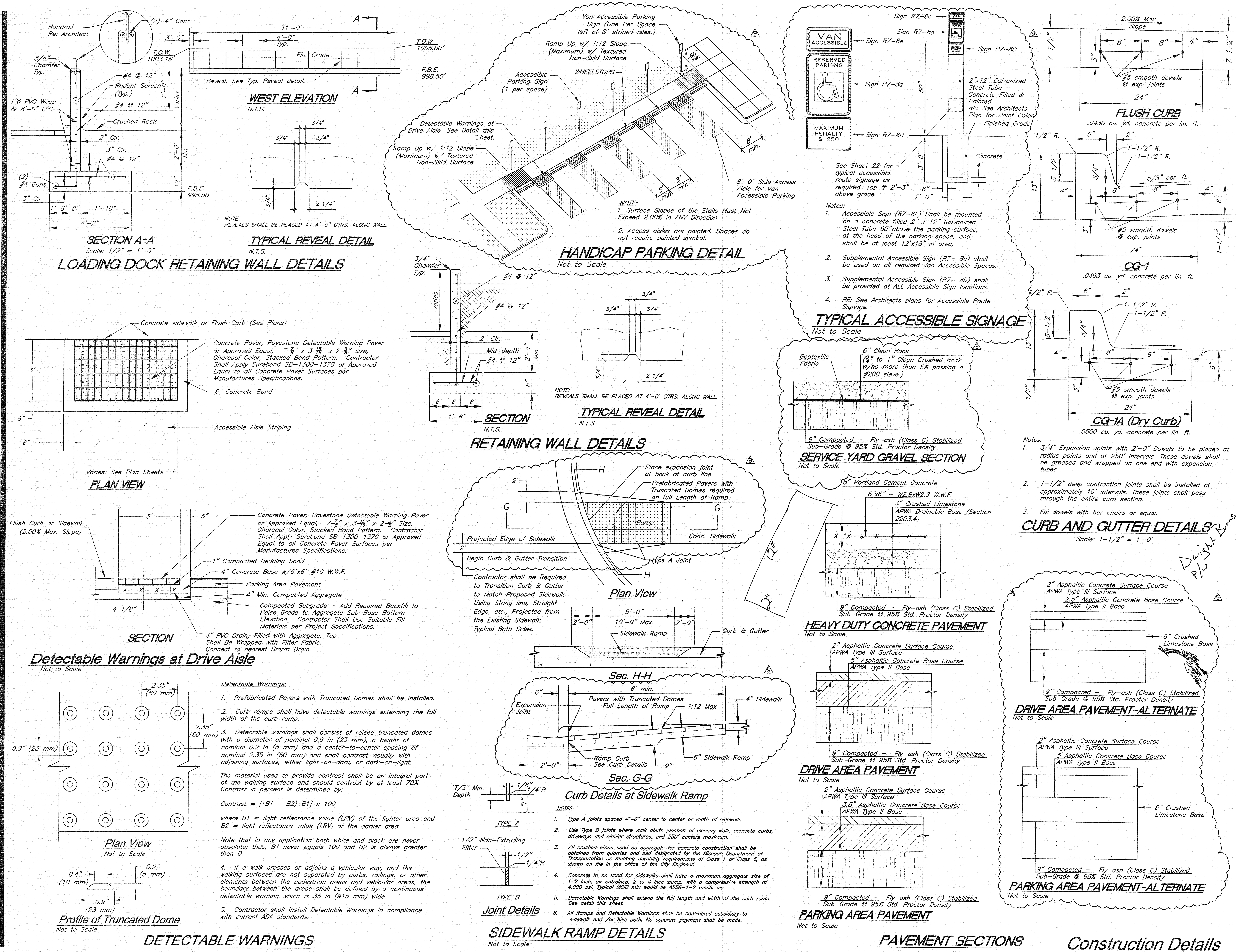

LOADING DOCK RETAINING WALL DETAILS
SECTION A-A
Scale: 1/2" = 1'-0"
Handrail Re: Architect
(2)-4" Cont.
3/4" Chamfer Typ.
#4 @ 12"
Rodent Screen (Typ.)
1"ø PVC Weep @ 8'-0" O.C.
Crushed Rock
2" Clr.
3" Clr.
(2)-#4 Cont.
F.B.E. 998.50
T.O.W. 1003.16'
WEST ELEVATION
N.T.S.
31'-0"
4'-0" Typ.
Fin. Grade
T.O.W. 1006.00'
F.B.E. 998.50'
Reveal. See Typ. Reveal detail.
TYPICAL REVEAL DETAIL
N.T.S.
NOTE: REVEALS SHALL BE PLACED AT 4'-0" CTRS. ALONG WALL.
HANDICAP PARKING DETAIL
Not to Scale
Van Accessible Parking Sign (One Per Space left of 8' striped isles.)
Ramp Up w/ 1:12 Slope (Maximum) w/ Textured Non-Skid Surface
Accessible Parking Sign (1 per space)
WHEELSTOPS
Detectable Warnings at Drive Aisle. See Detail this Sheet.
Ramp Up w/ 1:12 Slope (Maximum) w/ Textured Non-Skid Surface
8'-0" Side Access Aisle for Van Accessible Parking
NOTE:
1. Surface Slopes of the Stalls Must Not Exceed 2.00% in ANY Direction
2. Access aisles are painted. Spaces do not require painted symbol.
TYPICAL ACCESSIBLE SIGNAGE
Not to Scale
VAN ACCESSIBLE — Sign R7-8e
RESERVED PARKING — Sign R7-8a
MAXIMUM PENALTY $ 250 — Sign R7-8D
2"x12" Galvanized Steel Tube – Concrete Filled & Painted RE: See Architects Plan for Paint Color
Finished Grade
Concrete
See Sheet 22 for typical accessible route signage as required. Top @ 2'-3" above grade.
Notes:
1. Accessible Sign (R7-8E) Shall be mounted on a concrete filled 2" x 12" Galvanized Steel Tube 60" above the parking surface, at the head of the parking space, and shall be at least 12"x18" in area.
2. Supplemental Accessible Sign (R7- 8e) shall be used on all required Van Accessible Spaces.
3. Supplemental Accessible Sign (R7- 8D) shall be provided at ALL Accessible Sign locations.
4. RE: See Architects plans for Accessible Route Signage.
CURB AND GUTTER DETAILS
Scale: 1-1/2" = 1'-0"
FLUSH CURB
2.00% Max. Slope
#5 smooth dowels @ exp. joints
.0430 cu. yd. concrete per lin. ft.
CG-1
.0493 cu. yd. concrete per lin. ft.
CG-1A (Dry Curb)
.0500 cu. yd. concrete per lin. ft.
5/8" per. ft.
Notes:
1. 3/4" Expansion Joints with 2'-0" Dowels to be placed at radius points and at 250' intervals. These dowels shall be greased and wrapped on one end with expansion tubes.
2. 1-1/2" deep contraction joints shall be installed at approximately 10' intervals. These joints shall pass through the entire curb section.
3. Fix dowels with bar chairs or equal.
RETAINING WALL DETAILS
SECTION
N.T.S.
Mid-depth
TYPICAL REVEAL DETAIL
N.T.S.
NOTE: REVEALS SHALL BE PLACED AT 4'-0" CTRS. ALONG WALL.
Detectable Warnings at Drive Aisle
Not to Scale
PLAN VIEW
Concrete sidewalk or Flush Curb (See Plans)
Concrete Paver, Pavestone Detectable Warning Paver or Approved Equal, 7-7/8" x 3-15/16" x 2-3/8" Size, Charcoal Color, Stacked Bond Pattern. Contractor Shall Apply Surebond SB-1300-1370 or Approved Equal to all Concrete Paver Surfaces per Manufactures Specifications.
6" Concrete Band
Accessible Aisle Striping
Varies: See Plan Sheets
SECTION
Flush Curb or Sidewalk (2.00% Max. Slope)
1" Compacted Bedding Sand
4" Concrete Base w/6"x6" #10 W.W.F.
Parking Area Pavement
4" Min. Compacted Aggregate
Compacted Subgrade – Add Required Backfill to Raise Grade to Aggregate Sub-Base Bottom Elevation. Contractor Shall Use Suitable Fill Materials per Project Specifications.
4" PVC Drain, Filled with Aggregate, Top Shall Be Wrapped with Filter Fabric. Connect to nearest Storm Drain.
DETECTABLE WARNINGS
Plan View
Not to Scale
2.35" (60 mm)
0.9" (23 mm)
Profile of Truncated Dome
Not to Scale
0.4" (10 mm)
0.2" (5 mm)
Detectable Warnings:
1. Prefabricated Pavers with Truncated Domes shall be installed.
2. Curb ramps shall have detectable warnings extending the full width of the curb ramp.
3. Detectable warnings shall consist of raised truncated domes with a diameter of nominal 0.9 in (23 mm), a height of nominal 0.2 in (5 mm) and a center-to-center spacing of nominal 2.35 in (60 mm) and shall contrast visually with adjoining surfaces, either light-on-dark, or dark-on-light.
The material used to provide contrast shall be an integral part of the walking surface and should contrast by at least 70%. Contrast in percent is determined by:
Contrast = [(B1 – B2)/B1] x 100
where B1 = light reflectance value (LRV) of the lighter area and B2 = light reflectance value (LRV) of the darker area.
Note that in any application both white and black are never absolute; thus, B1 never equals 100 and B2 is always greater than 0.
4. If a walk crosses or adjoins a vehicular way, and the walking surfaces are not separated by curbs, railings, or other elements between the pedestrian areas and vehicular areas, the boundary between the areas shall be defined by a continuous detectable warning which is 36 in (915 mm) wide.
5. Contractor shall install Detectable Warnings in compliance with current ADA standards.
SIDEWALK RAMP DETAILS
Not to Scale
Curb Details at Sidewalk Ramp
Plan View
Place expansion joint at back of curb line
Prefabricated Pavers with Truncated Domes required on full Length of Ramp
Projected Edge of Sidewalk
Begin Curb & Gutter Transition
Conc. Sidewalk
Type A Joint
Contractor shall be Required to Transition Curb & Gutter to Match Proposed Sidewalk Using String line, Straight Edge, etc., Projected from the Existing Sidewalk. Typical Both Sides.
Sec. H-H
10'-0" Max.
Sidewalk Ramp
Curb & Gutter
Sec. G-G
6' min.
Expansion Joint
Pavers with Truncated Domes Full Length of Ramp
1:12 Max.
4" Sidewalk
Ramp Curb See Curb Details
6" Sidewalk Ramp
Joint Details
TYPE A
TYPE B
"T/3" Min. Depth
1/2" Non-Extruding Filler
NOTES:
1. Type A joints spaced 4'-0" center to center or width of sidewalk.
2. Use Type B joints where walk abuts junction of existing walk, concrete curbs, driveways and similar structures, and 250' centers maximum.
3. All crushed stone used as aggregate for concrete construction shall be obtained from quarries and bed designated by the Missouri Department of Transportation as meeting durability requirements of Class 1 or Class 6, as shown on file in the office of the City Engineer.
4. Concrete to be used for sidewalks shall have a maximum aggregate size of 1/2 inch, air entrained, 2 to 4 inch slump, with a compressive strength of 4,000 psi. Typical MCIB mix would be A558-1-2 mech. vib.
5. Detectable Warnings shall extend the full length and width of the curb ramp. See detail this sheet.
6. All Ramps and Detectable Warnings shall be considered subsidiary to sidewalk and /or bike path. No separate payment shall be made.
PAVEMENT SECTIONS
SERVICE YARD GRAVEL SECTION
Not to Scale
Geotextile Fabric
6" Clean Rock (3/4" to 1" Clean Crushed Rock w/no more than 5% passing a #200 sieve.)
9" Compacted – Fly-ash (Class C) Stabilized Sub-Grade @ 95% Std. Proctor Density
HEAVY DUTY CONCRETE PAVEMENT
Not to Scale
8" Portland Cement Concrete
6"x6" – W2.9xW2.9 W.W.F.
4" Crushed Limestone
APWA Drainable Base (Section 2203.4)
DRIVE AREA PAVEMENT
Not to Scale
2" Asphaltic Concrete Surface Course APWA Type III Surface
5" Asphaltic Concrete Base Course APWA Type II Base
PARKING AREA PAVEMENT
Not to Scale
3.5" Asphaltic Concrete Base Course APWA Type II Base
DRIVE AREA PAVEMENT-ALTERNATE
Not to Scale
2.5" Asphaltic Concrete Base Course APWA Type II Base
6" Crushed Limestone Base
PARKING AREA PAVEMENT-ALTERNATE
Not to Scale
Construction Details

Site Construction Plans for:

REPLACEMENT HOSPITAL

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Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

GBA
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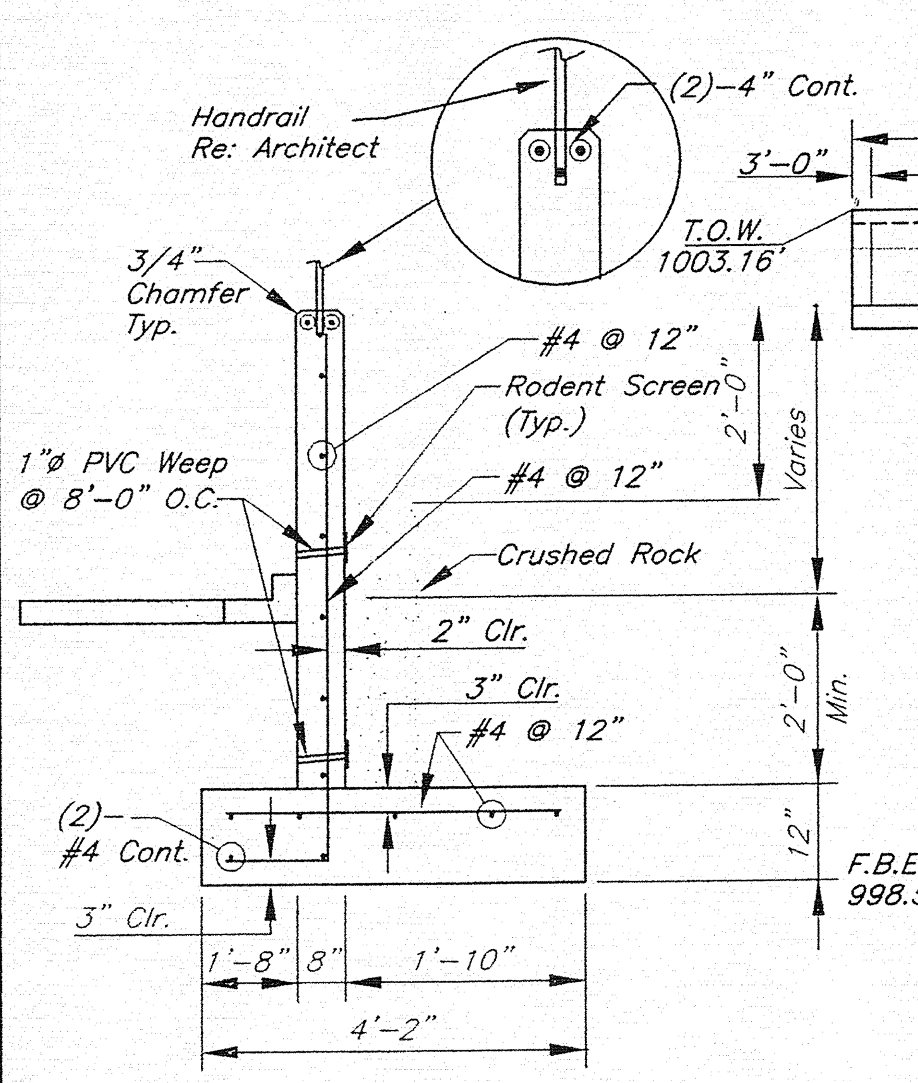
STATE OF MISSOURI — BRADLEY D. BURTON — NUMBER E-25662 — REGISTERED PROFESSIONAL ENGINEER — 10/23/06

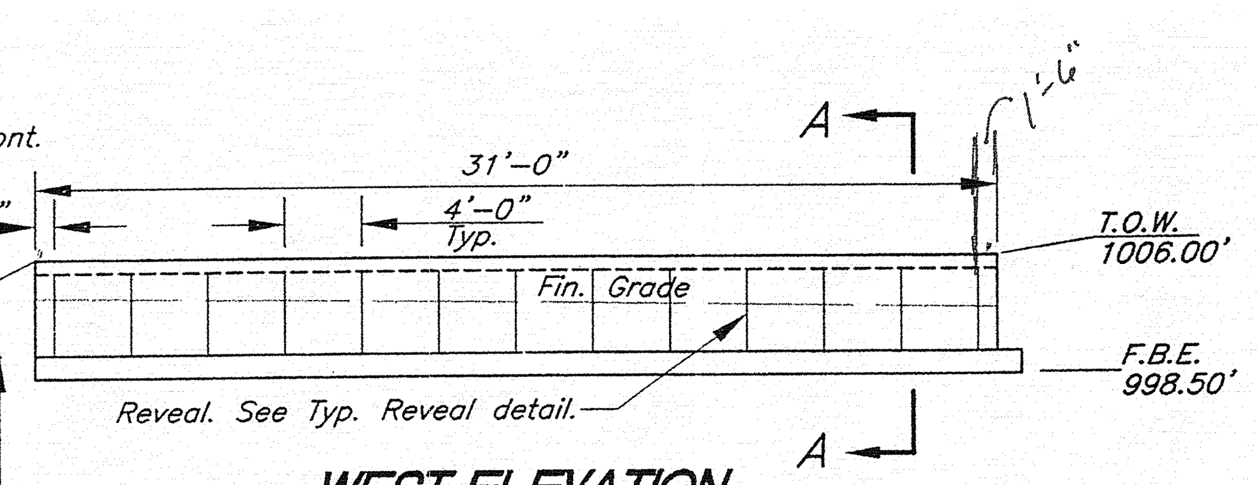
PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 – 06/02/06
Revised – RFI #0118 – 08/07/06
ASI #7 – 10/20/06

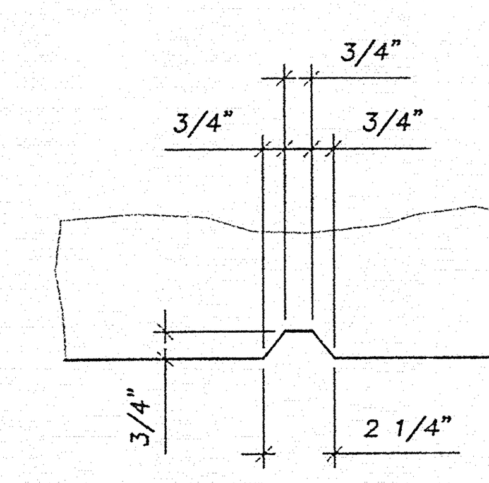
DESIGNED
H.T.R. / J.W.M.
DRAWN
B.I.B.
REVIEWED
B.D.B.
SHEET TITLE
Construction Details



SECTION A-A
Scale: 1/2" = 1'-0"



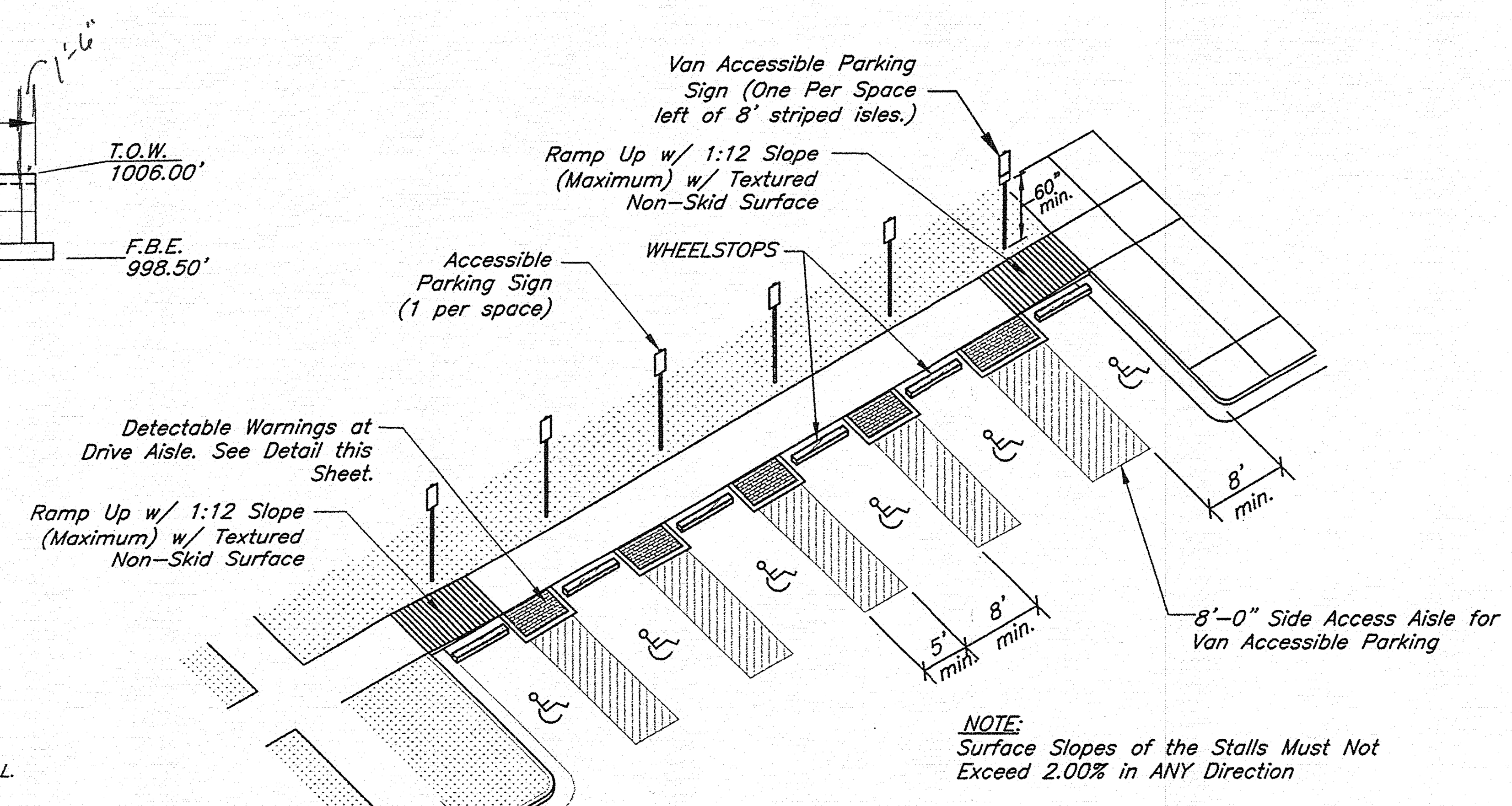
WEST ELEVATION
N.T.S.



NOTE:
REVEALS SHALL BE PLACED AT 4'-0" CTRS. ALONG WALL.

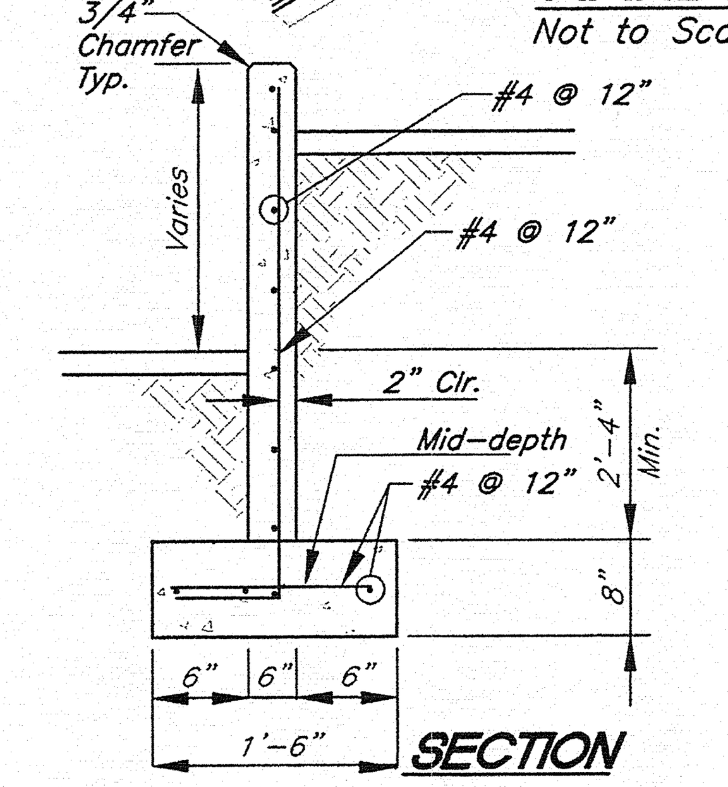
TYPICAL REVEAL DETAIL
N.T.S.

LOADING DOCK RETAINING WALL DETAILS

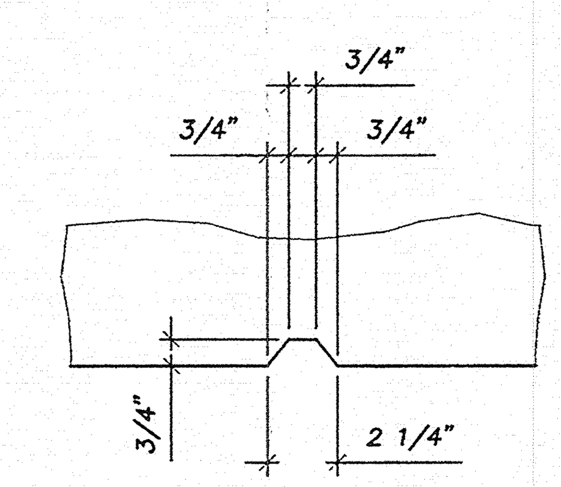


NOTE:
Surface Slopes of the Stalls Must Not Exceed 2.00% in ANY Direction

HANDICAP PARKING DETAIL
Not to Scale



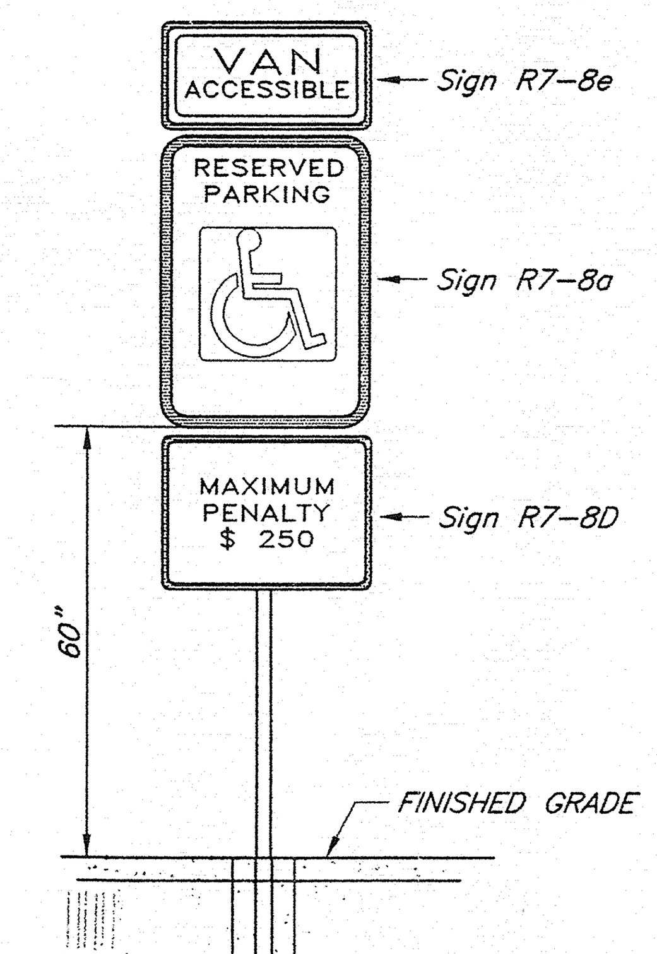
SECTION
N.T.S.



NOTE:
REVEALS SHALL BE PLACED AT 4'-0" CTRS. ALONG WALL.

TYPICAL REVEAL DETAIL
N.T.S.

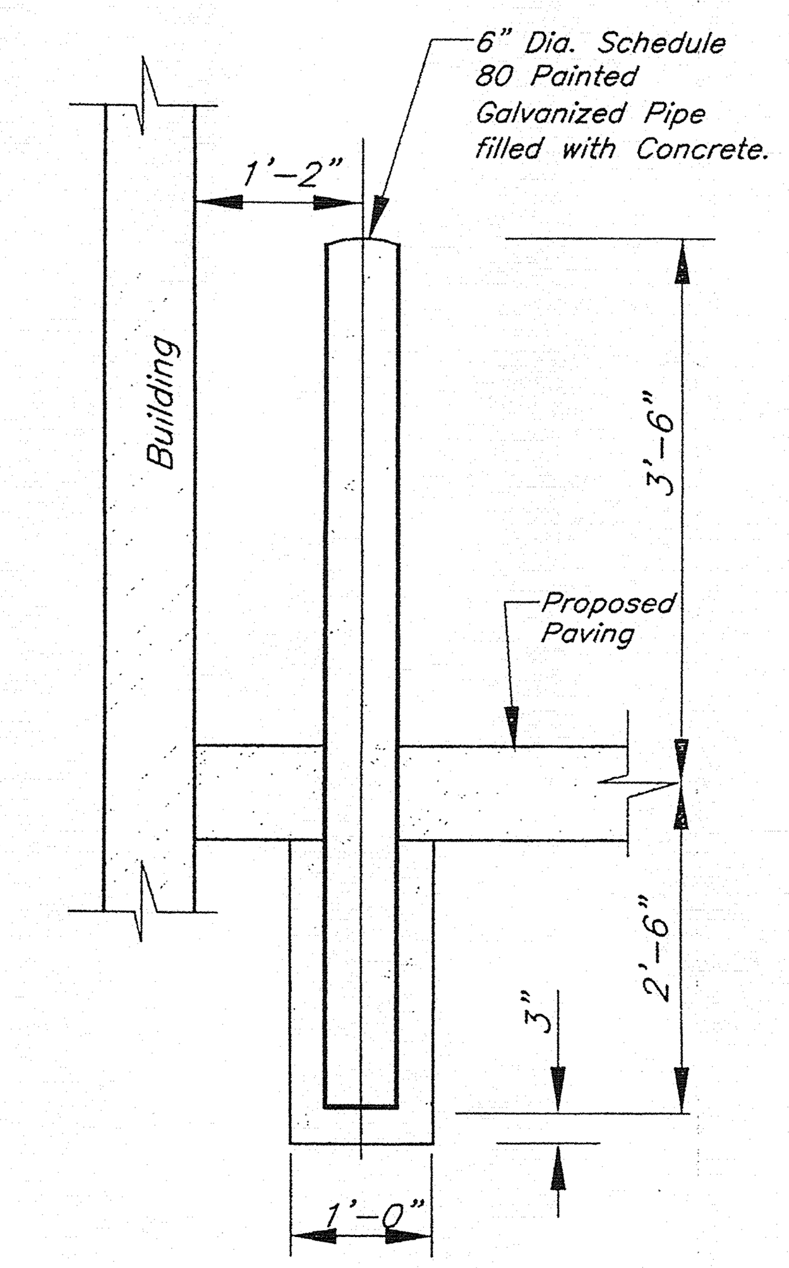
RETAINING WALL DETAILS



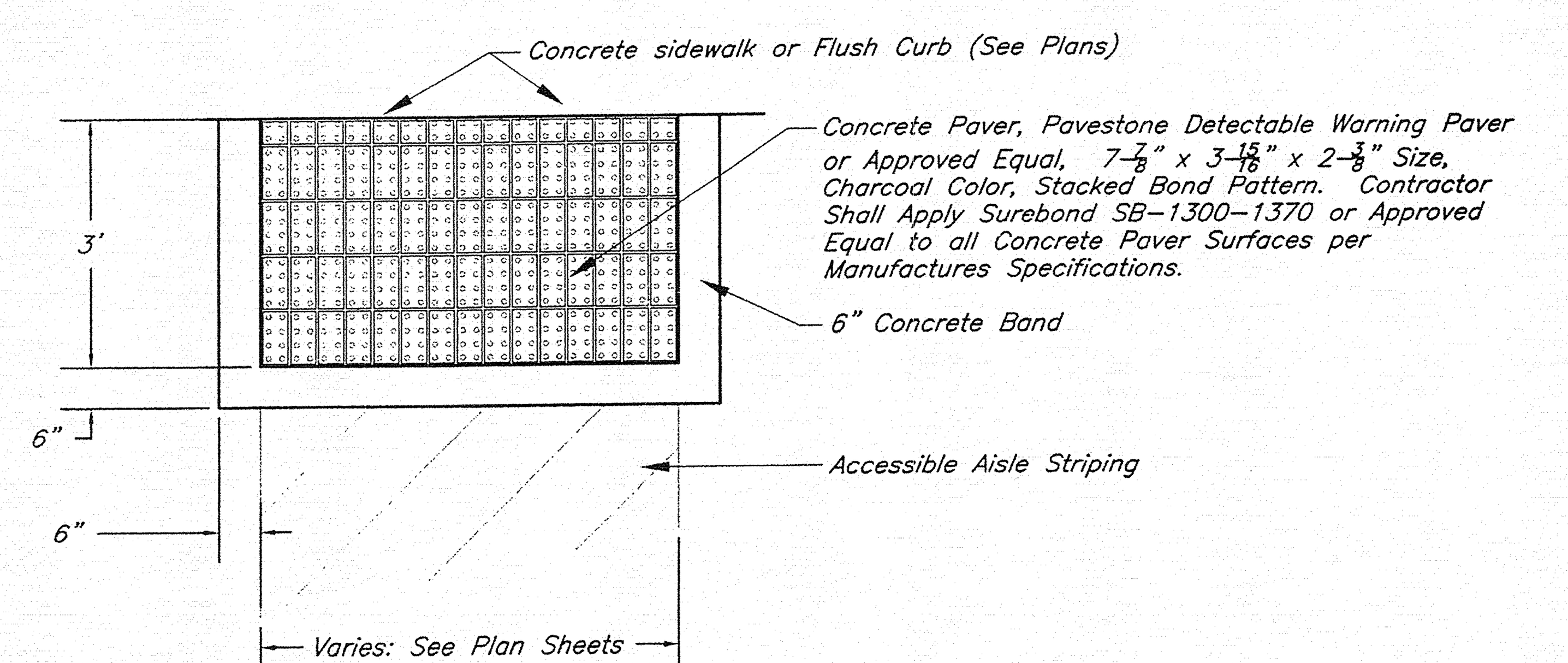
Notes:

1. Accessible Sign (R7-8E) Shall be mounted on a pole or other structure between 3 and 5 feet above the parking surface, at the head of the parking space, and shall be at least 12"x18" in area.
2. Supplemental Accessible Sign (R7- 8e) shall be used on all required Van Accessible Spaces.
3. Supplemental Accessible Sign (R7- 8D) shall be provided at ALL Accessible Sign locations.

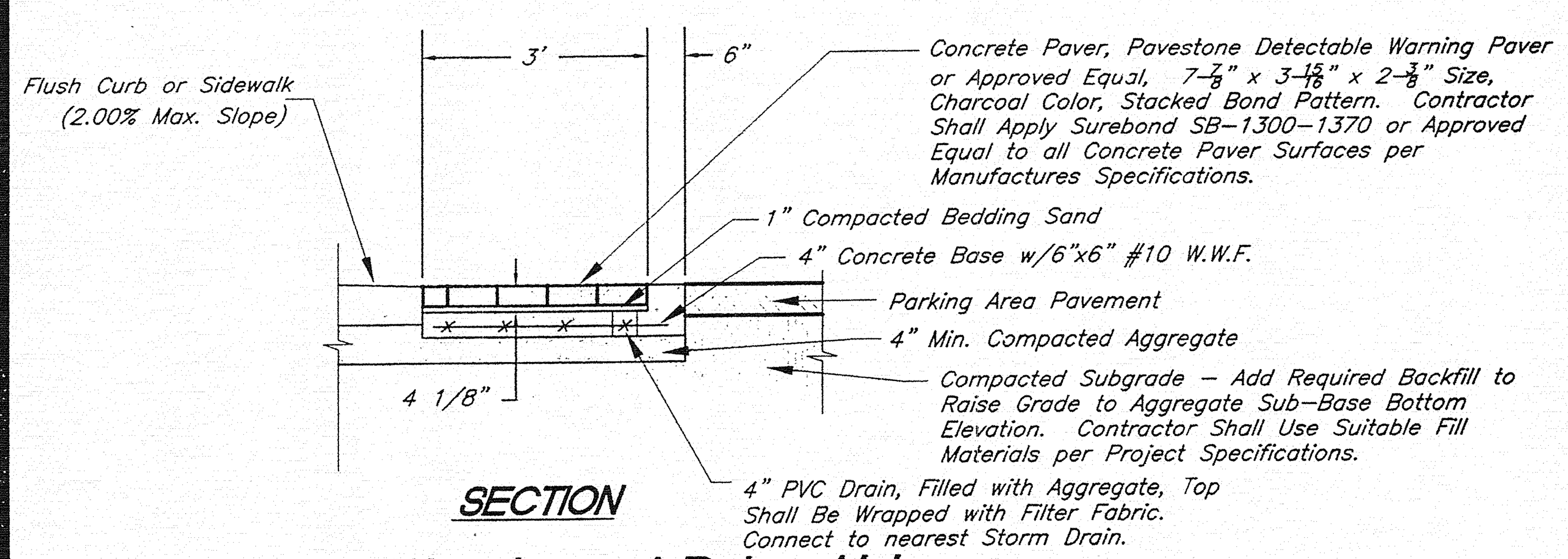
TYPICAL ACCESSIBLE SIGNAGE
Not to Scale



PIPE BOLLARD
Not to Scale

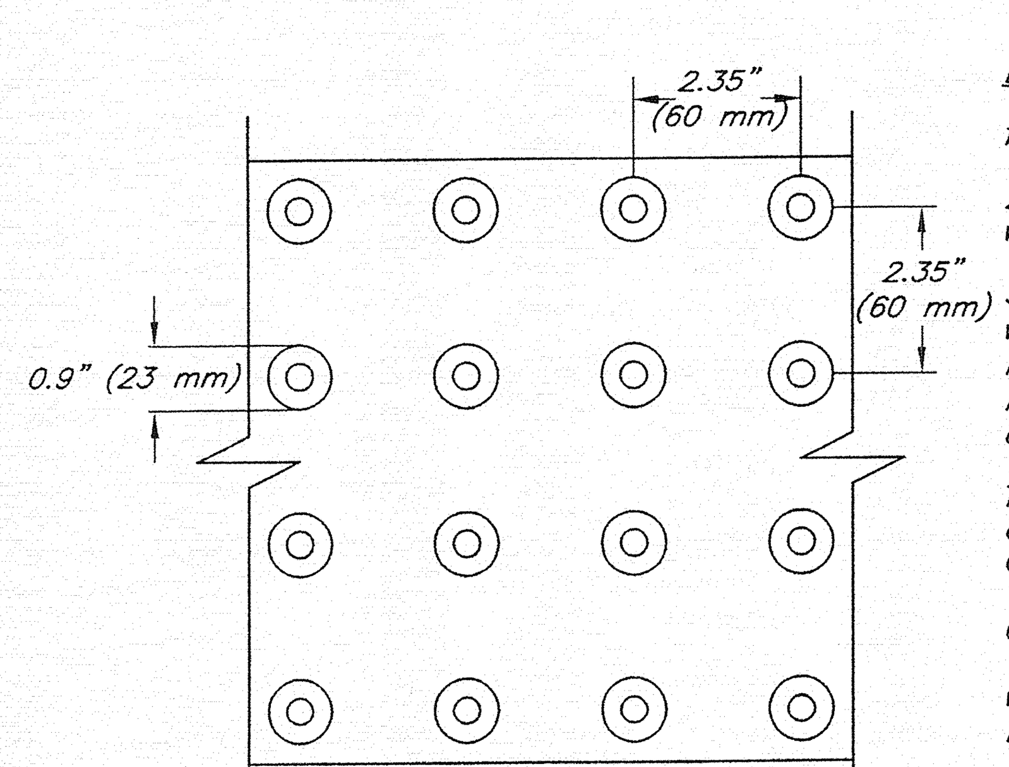


PLAN VIEW

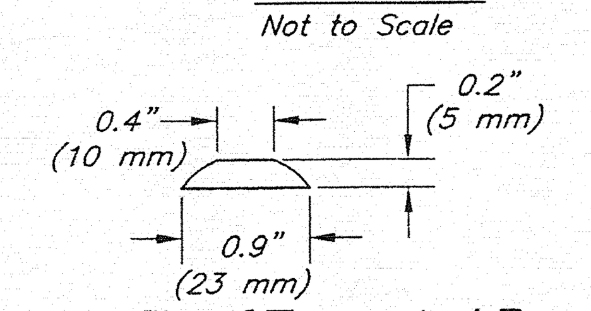


SECTION

Detectable Warnings at Drive Aisle



Plan View
Not to Scale



Profile of Truncated Dome
Not to Scale

Detectable Warnings:

1. Prefabricated Pavers with Truncated Domes shall be installed.
2. Curb ramps shall have detectable warnings extending the full width of the curb ramp.
3. Detectable warnings shall consist of raised truncated domes with a diameter of nominal 0.9 in (23 mm), a height of nominal 0.2 in (5 mm) and a center-to-center spacing of nominal 2.35 in (60 mm) and shall contrast visually with adjoining surfaces, either lignt-on-dark, or dark-on-light.

The material used to provide contrast shall be an integral part of the walking surface and should contrast by at least 70%. Contrast in percent is determined by:

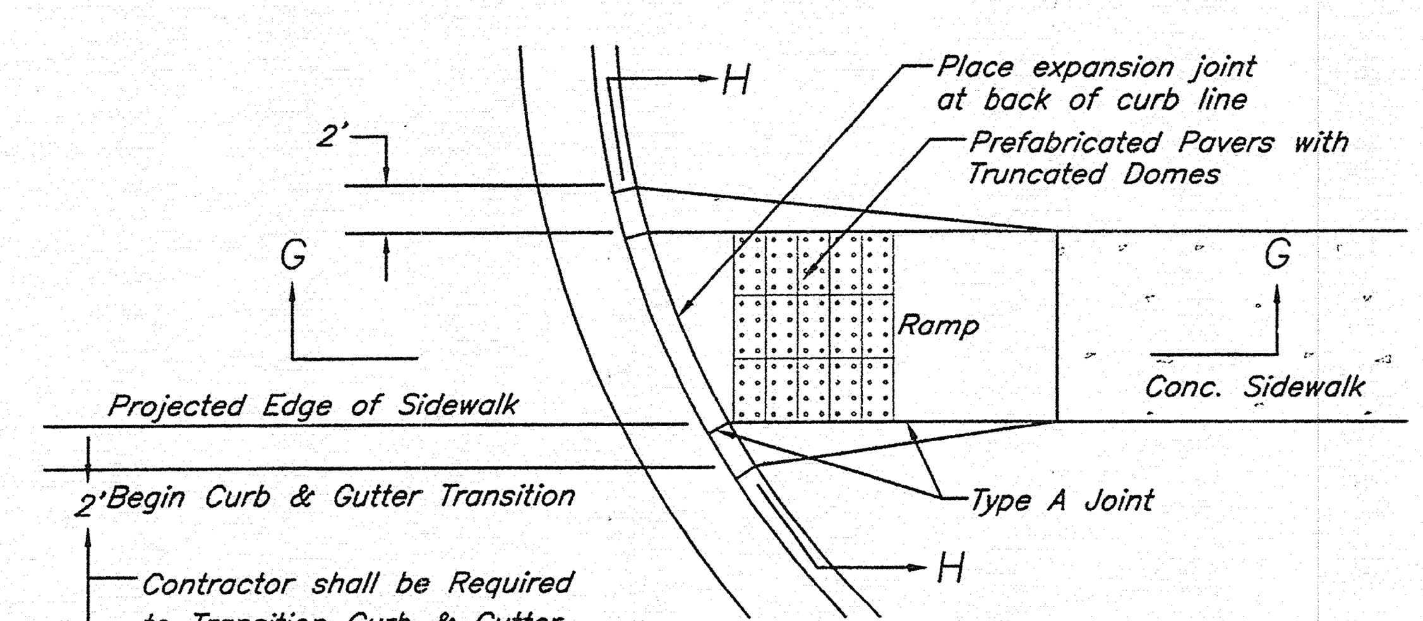
Contrast = [(B1 - B2)/B1] x 100

where B1 = light reflectance value (LRV) of the lighter area and B2 = light reflectance value (LRV) of the darker area.

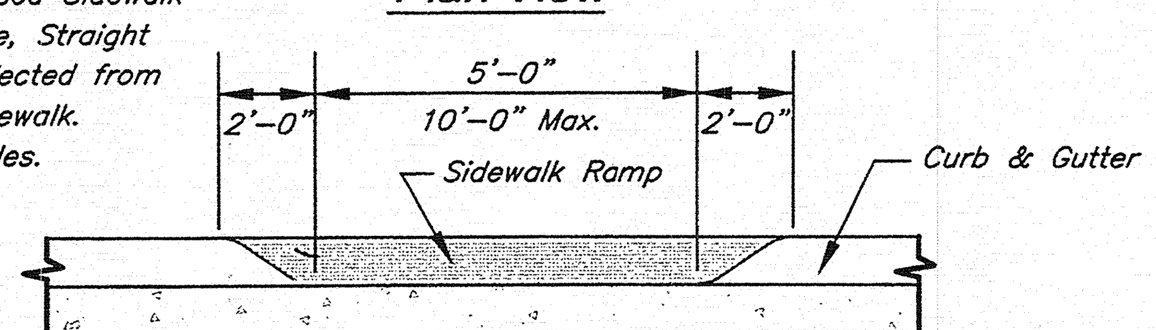
Note that in any application both white and black are never absolute; thus, B1 never equals 100 and B2 is always greater than 0.

4. If a walk crosses or adjoins a vehicular way, and the walking surfaces are not separated by curbs, railings, or other elements between the pedestrian areas and vehicular areas, the boundary between the areas shall be defined by a continuous detectable warning which is 36 in (915 mm) wide.
5. Contractor shall install Detectable Warnings in compliance with current ADA standards.

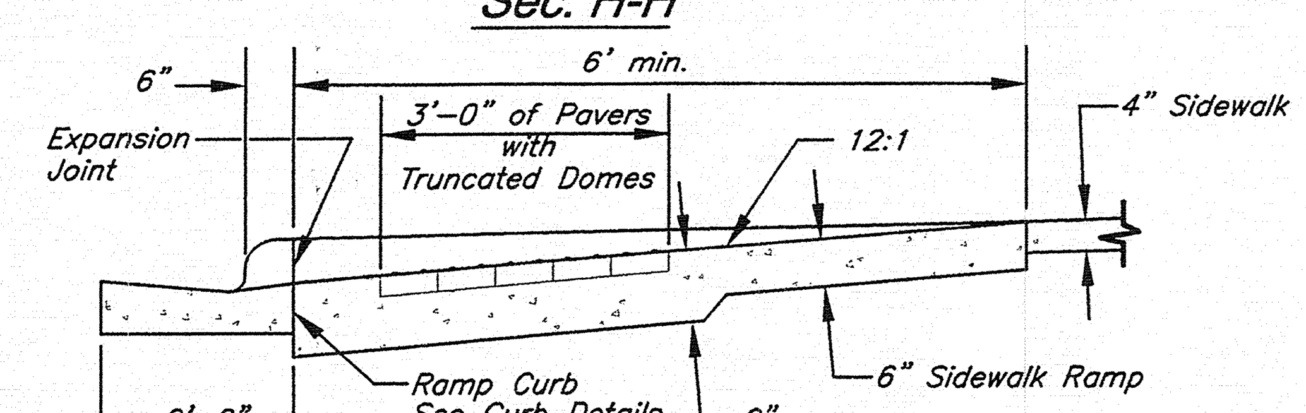
DETECTABLE WARNINGS



Plan View

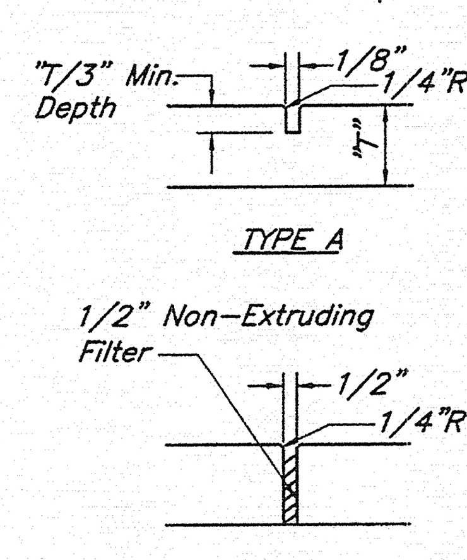


Sec. H-H



Sec. G-G

Curb Details at Sidewalk Ramp

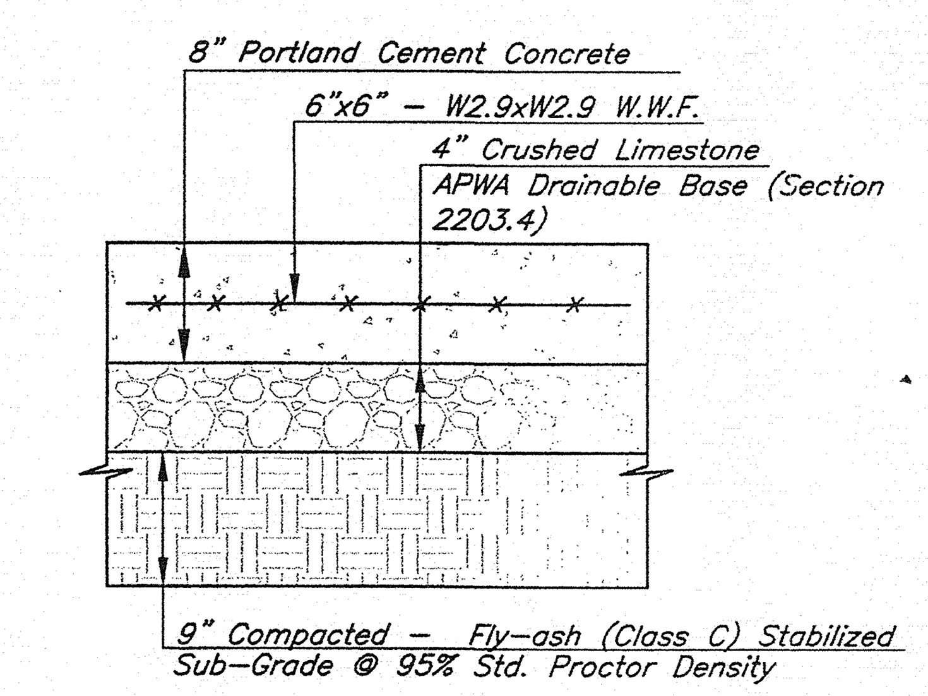


Joint Details

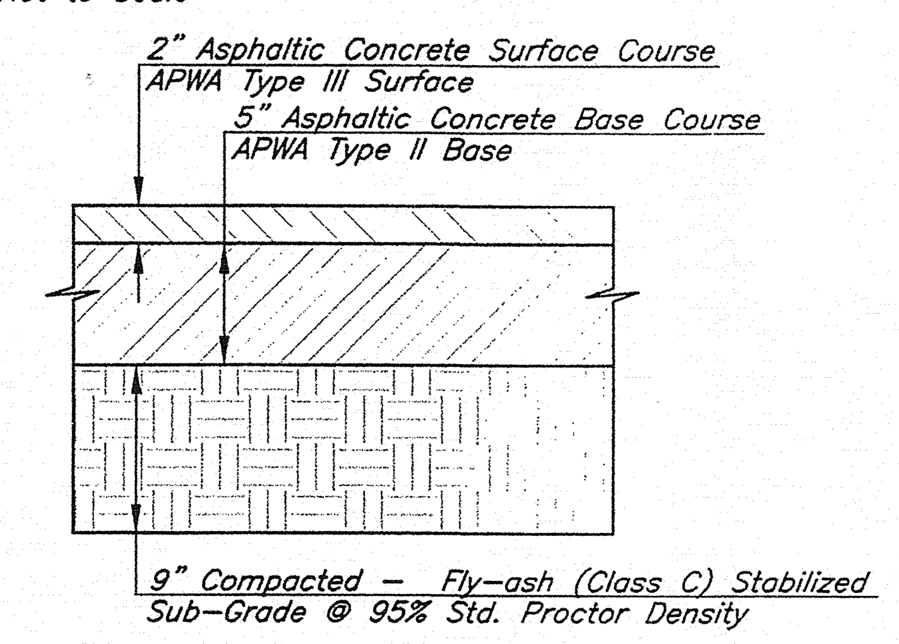
NOTES:

1. Type A joints spaced 4'-0" center to center or width of sidewalk.
2. Use Type B joints where walk abuts junction of existing walk, concrete curbs, driveways and similar structures, and 250' centers maximum.
3. All crushed stone used as aggregate for concrete construction shall be obtained from quarries and bed designated by the Missouri Department of Transportation as meeting durability requirements of Class 1 or Class 6, as shown on file in the office of the City Engineer.
4. Concrete to be used for sidewalks shall have a maximum aggregate size of 1/2 inch, air entrained, 2 to 4 inch slump, with a compressive strength of 4,000 psi. Typical MCIB mix would be A558-1-2 mech. vib.
5. Detectable Warnings shall extend the full length and width of the curb ramp. See detail this sheet.
6. All Ramps and Detectable Warnings shall be considered subsidiary to sidewalk and /or bike path. No separate payment shall be made.

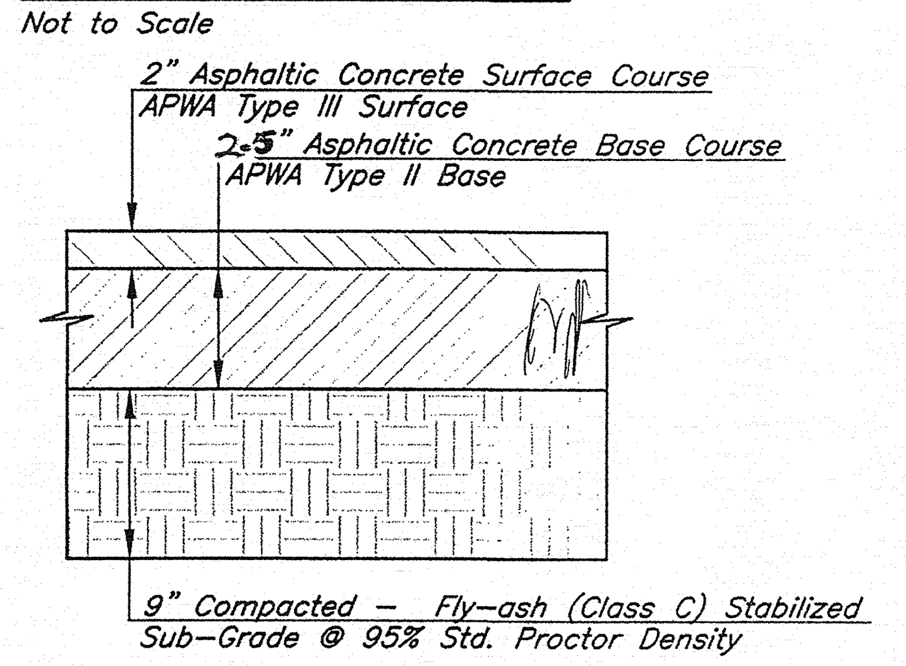
SIDEWALK RAMP DETAILS
Not to Scale



HEAVY DUTY CONCRETE PAVEMENT
Not to Scale

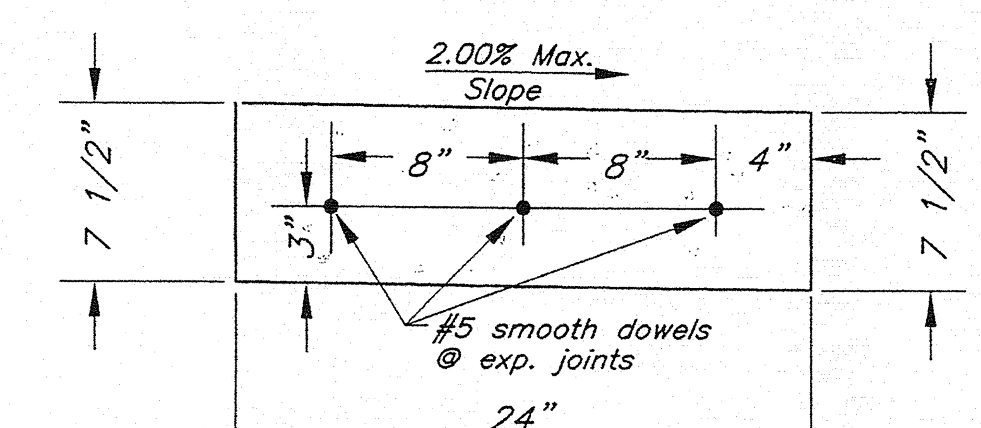


DRIVE AREA PAVEMENT
Not to Scale

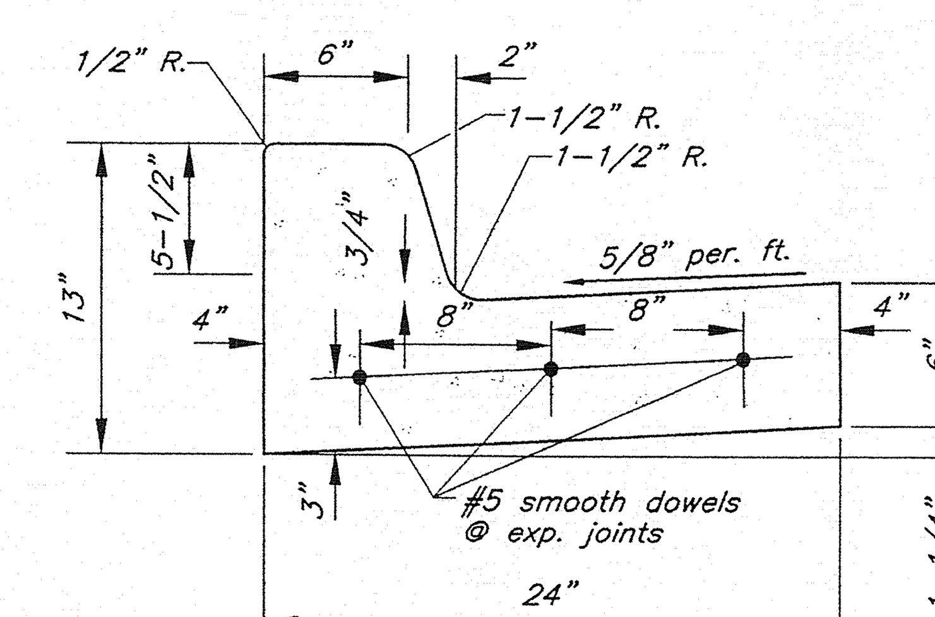


PARKING AREA PAVEMENT
Not to Scale

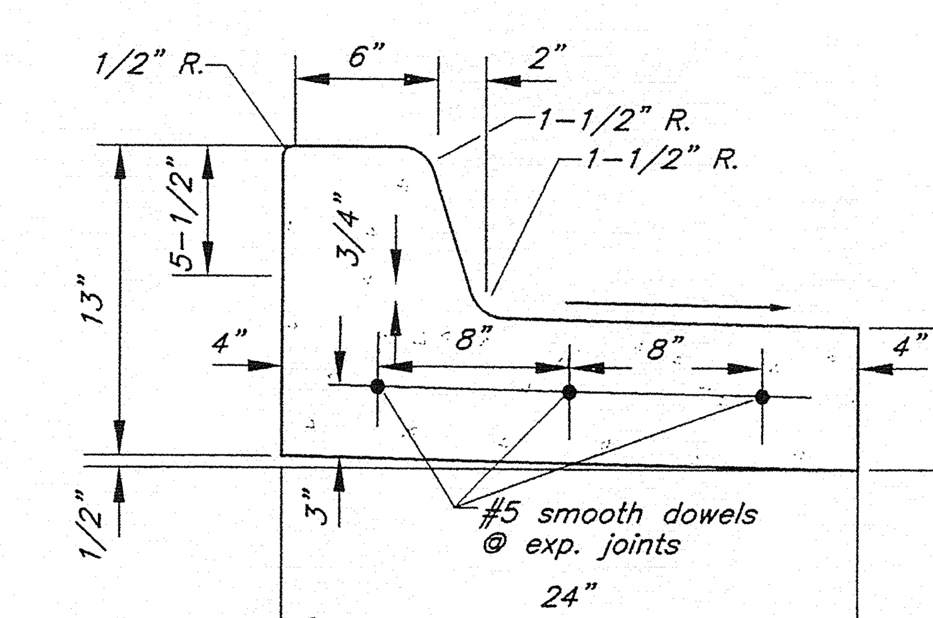
TYPICAL PAVEMENT SECTIONS



FLUSH CURB
.0430 cu. yd. concrete per lin. ft.



CG-1
.0493 cu. yd. concrete per lin. ft.



CG-1A (Dry Curb)
.0500 cu. yd. concrete per lin. ft.

Notes:

1. 3/4" Expansion Joints with 2'-0" Dowels to be placed at radius points and at 250' intervals. These dowels shall be greased and wrapped on one end with expansion tubes.
2. 1-1/2" deep contraction joints shall be installed at approximately 10' intervals. These joints shall pass through the entire curb section.
3. Fix dowels with bar chairs or equal.

CURB AND GUTTER DETAILS
Scale: 1-1/2" = 1'-0"

Construction Details

GEORGE BUTLER ASSOCIATES, INC.
Engineers • Architects
Kansas • Missouri • Illinois
One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219-9745
(913) 492-0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25862
REGISTERED PROFESSIONAL ENGINEER
6/2/06

PROJECT NUMBER
10367.00

DATE
First Issue as: ASI #2 - 06/02/06

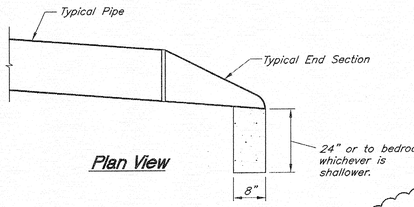
DESIGNED
H.T.R. / J.W.M.

DRAWN
B.I.B.

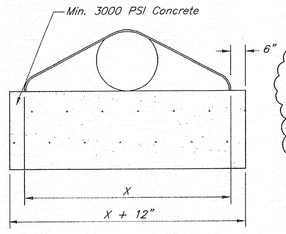
REVIEWED
B.D.B.

SHEET TITLE
Construction Details

SHEET NUMBER
27 of 29



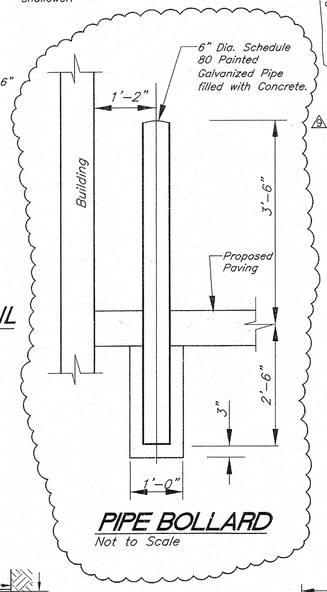
Plan View



End View

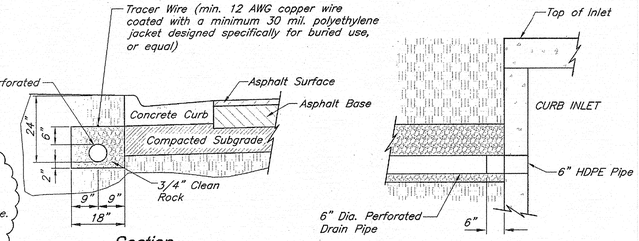
TYPICAL TOEWALL DETAIL

Not to Scale



PIPE BOLLARD

Not to Scale



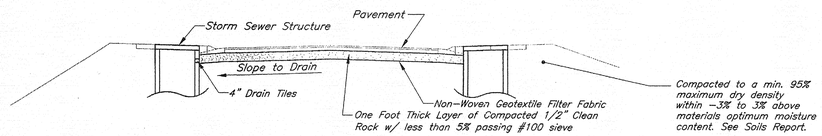
Section

Inlet Connection

Notes:
1. The entire trench and backfill shall be wrapped with a Type 1 Geotextile Fabric and lapped 12" on top.
2. Trenching placement and backfill of underdrains shall be performed only after compaction of subgrade is finished.
3. All underdrain pipe within porous backfill shall be laid with perforations down.
4. All underdrain pipe outside limits of porous backfill shall be laid with perforations up and covered with two layers of tar paper prior to placing earth backfill or shall be underdrain pipe that is not perforated.
5. Where necessary, porous backfill shall be extended past the minimum limits to completely enclose all pipe laid with perforations down.
6. All underdrain pipe shall slope toward outlet at a minimum rate of 1" per 10 feet.
7. Regardless of the depth shown on the plans, underdrain shall be set down into any impervious layer so as to definitely intercept seepage.
8. Porous backfill shall be ponded with water immediately before covering to effect maximum settlement of the backfill material.
9. The sketches shown on this sheet are not drawn to scale and are only intended as a general guide for placing and constructing underdrains. The actual location and construction shall be as directed by the engineer.

UNDER DRAIN DETAILS

Not to Scale

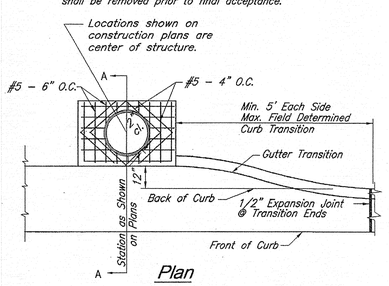


NOTES:
1. Blanket drains are required between all curb inlets or as directed by the geotechnical engineer.
2. All vegetation and topsoil shall be stripped an removed prior to the installation of blanket drains.
3. Blanket drains shall be sloped to drain to 4" drain tiles in curb inlets or 6" perforated underdrain pipes.
4. Drain pipes shall be sloped to drain and connected to storm sewer structures.

TYPICAL GRANULAR BLANKET DRAIN

Not to Scale

NOTE: Points of attachment provided for lifting precast tops shall be removed prior to final acceptance.



Plan

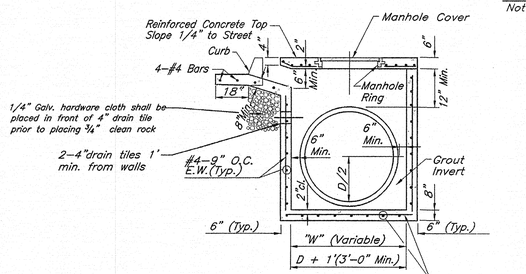
Notes
1. Contractor shall provide steps spaced at 1'-4" O.C. where inlet or manhole depth is greater than 4'-0". Steps shall be M.A. Industries, Inc. model PS-2-PF or approved equal.
2. Manhole ring and cover shall be Clay and Bailey No.2002, Neenah No. R6041, Deeter No. 1332 OR GCI SM2259 Std.
3. Gutter deflectors shall be installed per "Inlet Box With Deflectors Channels" detail, this Sheet, at Curb Inlets on streets over 4% grade.
4. Curb contractor shall hand form and finish gutter within the inlet throat to the rear of front inlet wall at the time the finishing of curb is accomplished.
5. MCIB mix no. A 558-1-2, 4000 PSI concrete shall be used for all standard curb inlets.
6. When there is a horizontal deflection in alignment, vertical drops through inlets and junction boxes shall be as follows:

Defection Angle (Degrees)	Drop (Feet)
0 TO 22-1/2	0.1
22-1/2 TO 45	0.2
45 TO 90	0.3

7. The tops of pipes shall match when pipes of different size enter an inlet or junction box.
8. The fill concrete flow channel shall be placed to provide a smooth transition into the line flow.
9. Length of inlet opening shall be determined in article IV, section I, B.11. When opening is greater than 6' long, a 6" concrete post with 3/4" deformed bar shall be required.
10. If throat opening is in excess of 8", a horizontal bar is to be provided at 1/2 the size of the opening.

STANDARD CURB AND GUTTER INLET

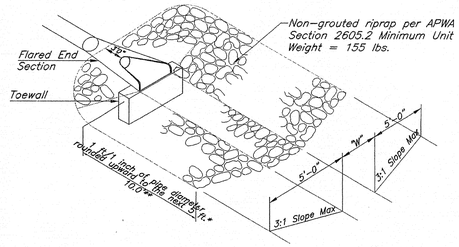
Not to Scale



Section A-A

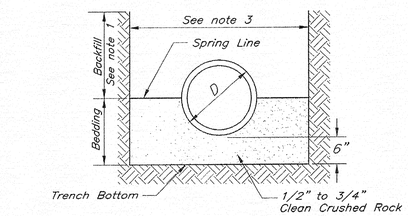
STANDARD CURB & GUTTER INLET

Not to Scale



RIPRAP

* Downstream End of Pipe
** Upstream End of Pipe(Typ.)



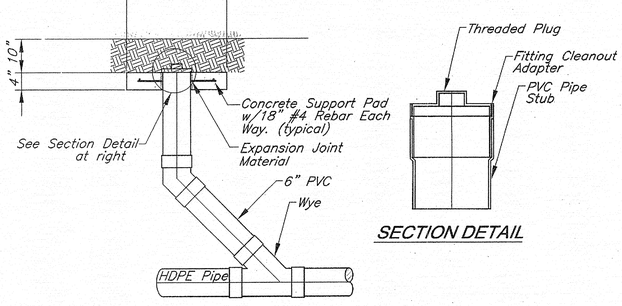
Trenches for Plastic Pipe Storm Sewer Lines
(In Rock or Soil)

Trenches for Concrete Pipe Storm Sewer Lines
(In Rock or Soil)

Notes:
1. Backfill shall be job excavated material free from debris and stones compacted to 95% of standard Proctor density at optimum moisture content as determined by ASTM D698. For backfill under pavement (existing or proposed). Backfill shall be either MoDOT Type 5 material compacted to 95% of ASTM D698 Maximum Density, at or near optimum moisture content or flowable fill.
2. Trench banks may be cut back on slopes in accordance with current OSHA regulations, but only in areas where the increased trench width will not interfere with surface features. Slopes must not extend below top of bedding.
3. Minimum and maximum widths shall be in accordance with pipe manufacturer's recommendation as approved on engineering plans.

PIPE BEDDING DETAILS

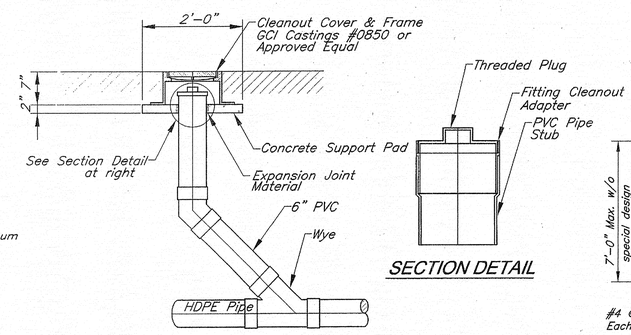
Not to Scale



SECTION DETAIL

BURIED CLEANOUT DETAIL

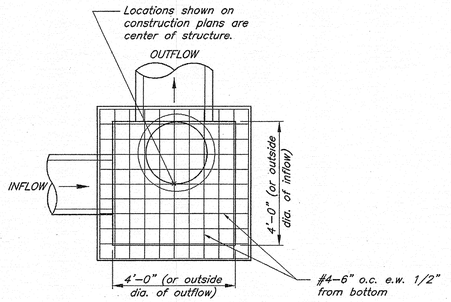
Not to Scale



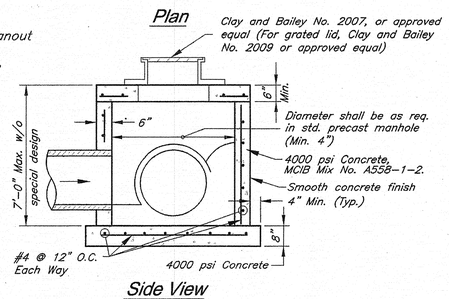
SECTION DETAIL

CLEANOUT DETAIL IN PAVED AREAS

Not to Scale



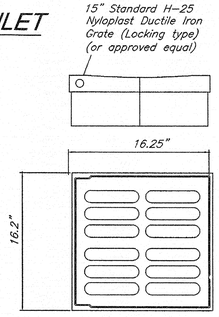
Plan



Side View

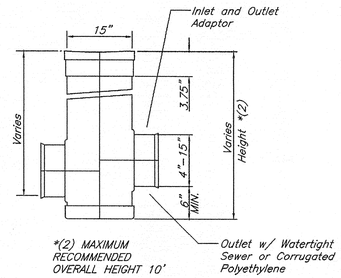
PIPE JUNCTION BOX

Not to Scale



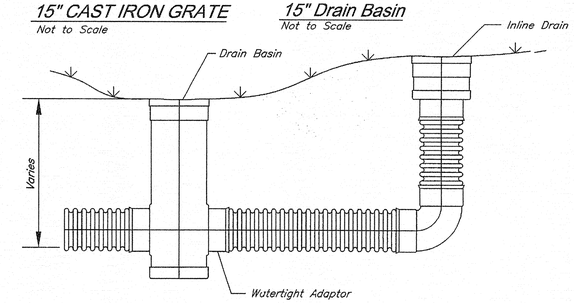
15" CAST IRON GRATE

Not to Scale



15" Drain Basin

Not to Scale



Typical Installation of Drain Basin and Inline Drain
Not to Scale

INLINE DRAIN/BASIN AND GRATE DETAILS

Not to Scale

Storm Sewer Details

GEORGE BUTLER ASSOCIATES, INC.
Engineers • Architects
Kansas • Missouri • Illinois
One Reamer Ridge
9201 Reamer Boulevard
Lenexa, Kansas 66219-9745
(913) 492-0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

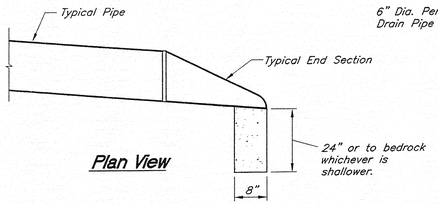
STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-26827
REGISTERED PROFESSIONAL ENGINEER
12/12/06

PROJECT NUMBER
10367.00

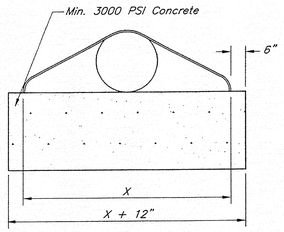
DATE
First Issue os: ASI #2 – 06/02/06
2 ASI #7 – 10/20/06

DESIGNED
H.T.R. / J.W.M.
DRAWN
B.I.B.
REVIEWED
B.D.B.
SHEET TITLE
Storm Sewer Details

SHEET NUMBER
28 of 29



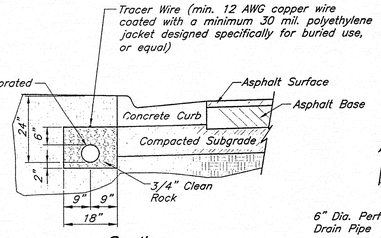
Plan View



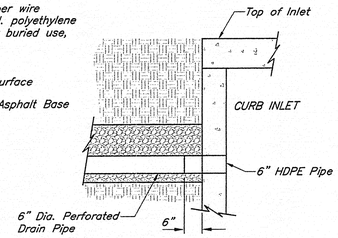
End View

TYPICAL TOEWALL DETAIL

Not to Scale



Section

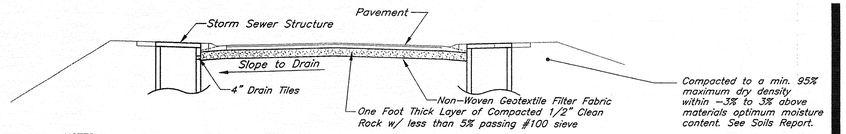


Inlet Connection

Notes:
1. The entire trench and backfill shall be wrapped with a Type 1 Geotextile Fabric and lapped 12" on top.
2. Trenching placement and backfill of underdrains shall be performed only after compaction of subgrade is finished.
3. All underdrain pipe within porous backfill shall be laid with perforations down.
4. All underdrain pipe outside limits of porous backfill shall be laid with perforations up and covered with two layers of tar paper prior to placing earth backfill or shall be underdrain pipe that is not perforated.
5. Where necessary, porous backfill shall be extended past the minimum limits to completely enclose all pipe laid with perforations down.
6. All underdrain pipe shall slope toward outlet at a minimum rate of 1" per 10 feet.
7. Regardless of the depth shown on the plans, underdrain shall be set down into any impervious layer so as to definitely intercept seepage.
8. Porous backfill shall be ponded with water immediately before covering to effect maximum settlement of the backfill material.
9. The sketches shown on this sheet are not drawn to scale and are only intended as a general guide for placing and constructing underdrains. The actual location and construction shall be as directed by the engineer.

UNDER DRAIN DETAILS

Not to Scale

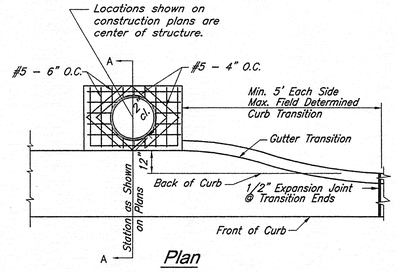


NOTES:
1. Blanket drains are required between all curb inlets or as directed by the geotechnical engineer.
2. All vegetation and topsoil shall be stripped an removed prior to the installation of blanket drains.
3. Blanket drains shall be sloped to drain to 4" drain tiles in curb inlets or 6" perforated underdrain pipes.
4. Drain pipes shall be sloped to drain and connected to storm sewer structures.

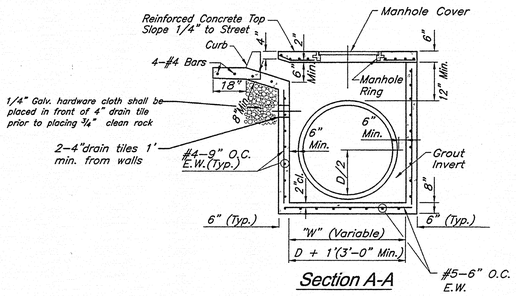
TYPICAL GRANULAR BLANKET DRAIN

Not to Scale

NOTE: Points of attachment provided for lifting precast tops shall be removed prior to final acceptance.



Plan



Section A-A

STANDARD CURB & GUTTER INLET

Not to Scale

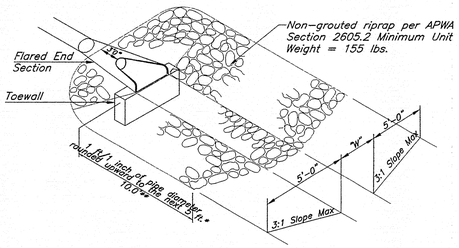
Notes
1. Contractor shall provide steps spaced at 1'-4" O.C. where inlet or manhole depth is greater than 4'-0". Steps shall be M.A. Industries, Inc. model PS-2-PF or approved equal.
2. Manhole ring and cover shall be Clay and Bailey No.2002, Neenah No. R6041, Deeter No. 1332 OR GCI 5M2259 Std.
3. Gutter deflectors shall be installed per "Inlet Box With Deflectors Channels" detail, this Sheet, at Curb Inlets on streets over 4% grade.
4. Curb contractor shall hand form and finish gutter within the inlet throat to the rear of front inlet wall at the time the finishing of curb is accomplished.
5. MCIB mix no. A 558-1-2, 4000 PSI concrete shall be used for all standard curb inlets.
6. When there is a horizontal deflection in alignment, vertical drops through inlets and junction boxes shall be as follows;

Defection Angle (Degrees)	Drop (Feet)
0 TO 22-1/2	0.1
22-1/2 TO 45	0.2
45 TO 90	0.3

7. The tops of pipes shall match when pipes of different size enter an inlet or junction box.
8. The fill concrete flow channel shall be placed to provide a smooth transition into the line flow.
9. Length of inlet opening shall be determined in article IV, section I, B.11. When opening is greater than 8' long, a 6" concrete post with 3/4" deformed bar shall be required.
10. If throat opening is in excess of 8", a horizontal bar is to be provided at 1/2 the size of the opening.

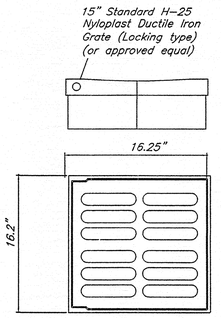
STANDARD CURB AND GUTTER INLET

Not to Scale



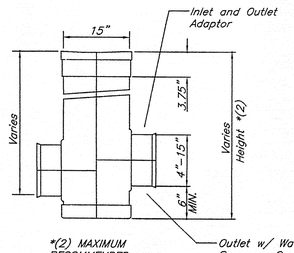
RIPRAP

* Downstream End of Pipe
** Upstream End of Pipe(Typ.)



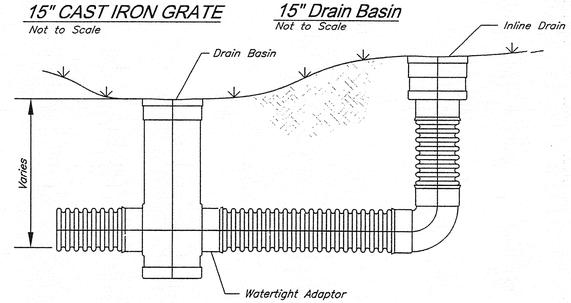
15" CAST IRON GRATE

Not to Scale



15" Drain Basin

Not to Scale

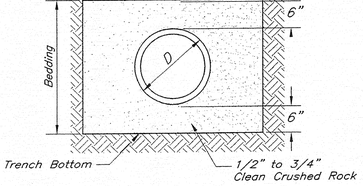


Typical Installation of Drain Basin and Inline Drain

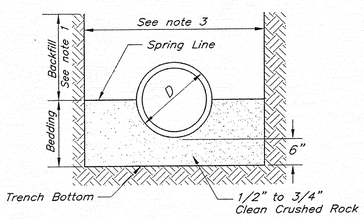
Not to Scale

INLINE DRAIN/BASIN AND GRATE DETAILS

Not to Scale



Trenches for Plastic Pipe Storm Sewer Lines
(In Rock or Soil)

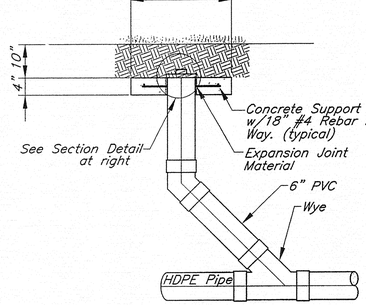


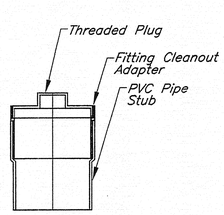
Trenches for Concrete Pipe Storm Sewer Lines
(In Rock or Soil)

Notes:
1. Backfill shall be job excavated material free from debris and stones compacted to 95% of standard Proctor density at optimum moisture content as determined by ASTM D698. For backfill under pavement (existing or proposed). Backfill shall be either MoDOT Type 5 material compacted to 95% of ASTM D698 Maximum Density, at or near optimum moisture content or flowable fill.
2. Trench banks may be cut back on slopes in accordance with current OSHA regulations, but only in areas where the increased trench width will not interfere with surface features. Slopes must not extend below top of bedding.
3. Minimum and maximum widths shall be in accordance with pipe manufacturer's recommendation as approved on engineering plans.

PIPE BEDDING DETAILS

Not to Scale

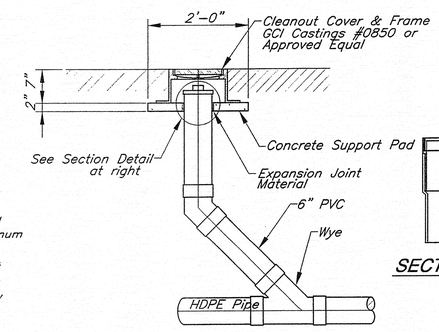


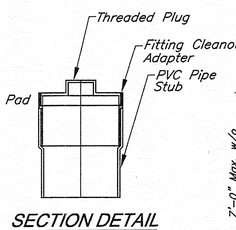


SECTION DETAIL

BURIED CLEANOUT DETAIL

Not to Scale

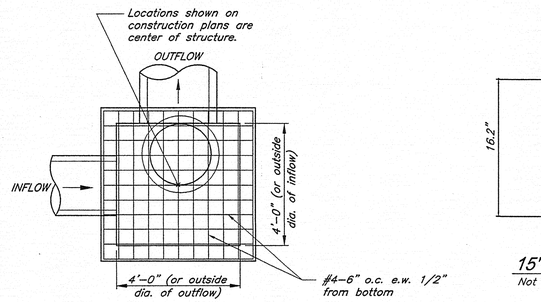




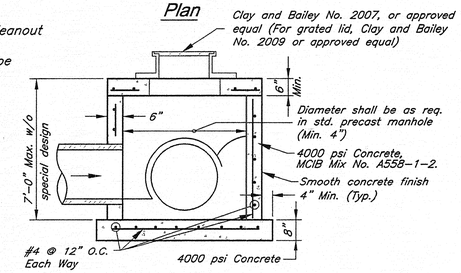
SECTION DETAIL

CLEANOUT DETAIL IN PAVED AREAS

Not to Scale



Plan



Side View

PIPE JUNCTION BOX

Not to Scale

GBA
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One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219-9745
(913) 492-0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL-2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E-25963
REGISTERED PROFESSIONAL ENGINEER
6/9/06

PROJECT NUMBER
10367.00

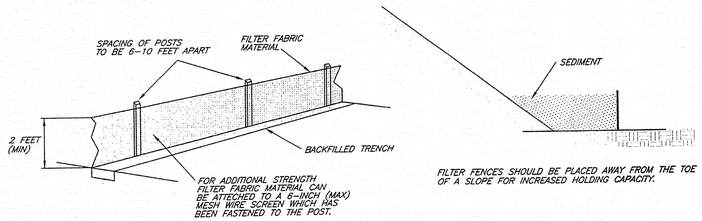
DATE
First Issue as: ASI #2 - 06/02/06

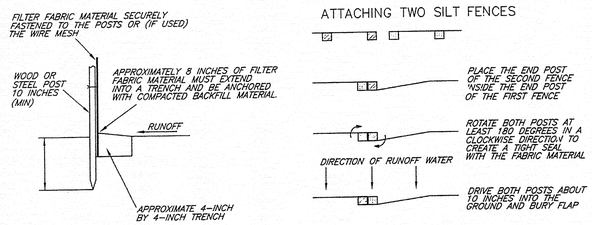
DESIGNED
H.T.R. / J.W.M.
DRAWN
B.I.B.
REVIEWED
B.D.B.

SHEET TITLE
Storm Sewer Details

SHEET NUMBER
28 of 29

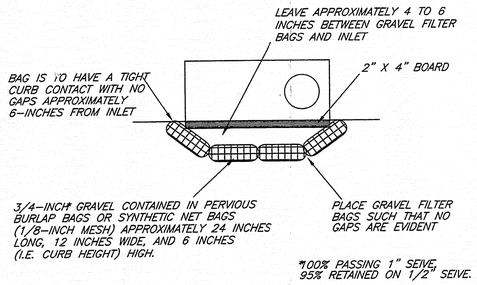
Storm Sewer Details



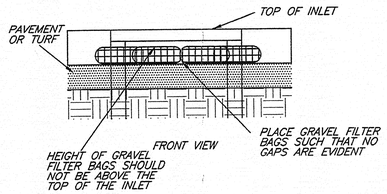


SEDIMENT FENCE INSTALLATION

Not to Scale



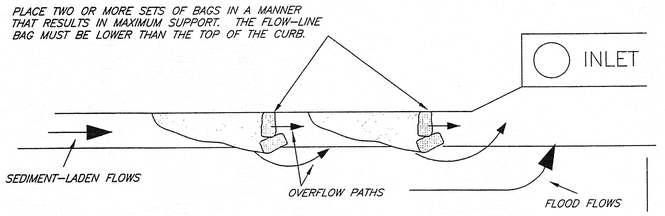
PLAN VIEW



FRONT VIEW

INLET PROTECTION IN A SUMP

Not to Scale



NOTE: BAGS MUST BE PARTIALLY (ABOUT 2/3) FULL

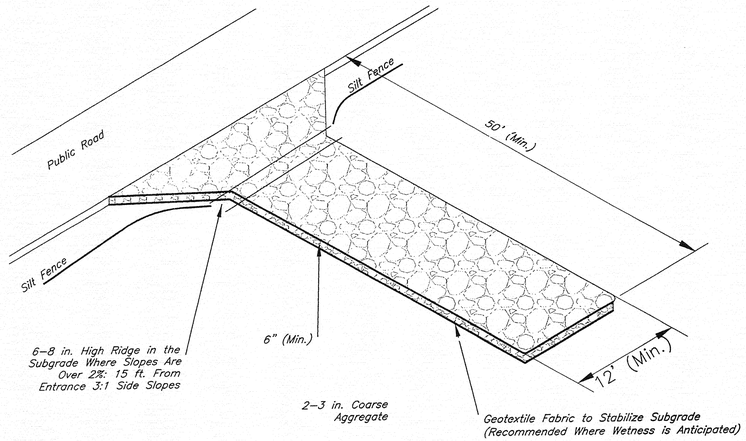
PLAN VIEW

Grade (%)	Spacing (ft.)
0.5	100
1.0	50
2.0	25
3.0	16
4.0	13
5.0	10

SPACING OF ROCK BAGS

INLET PROTECTION ON A SLOPE

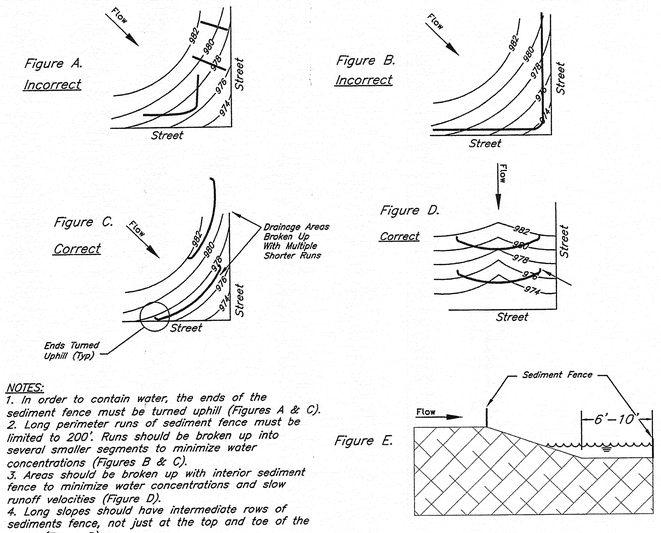
Not to Scale



Gravel Construction Entrance Notes:
1. Avoid locating on steep slopes or at curves on public roads. If possible, locate where permanent roads will eventually be constructed.
2. Remove all vegetation and other unsuitable material from the subgrade area, grade and crown for positive drainage.
3. If slope towards the road exceeds 2%, construct a 6–8 inch high ridge with 3:1 side slopes across the approach approximately 15 feet from the entrance to divert runoff away from public road.
4. Aggregate size shall be 2– 3–inch wash stone
5. Pad Design thickness 6 inches minimum. Width – 12 feet minimum or full width roadway, whichever is greater. Length – 50 feet minimum.
6. Washing Facility (Optional): Level area with minimum of 3 inches of washed stone.

GRAVEL CONSTRUCTION ENTRANCE

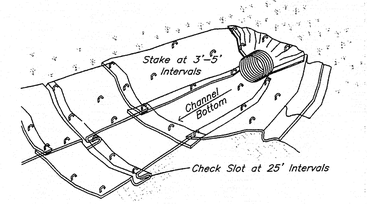
Not to Scale

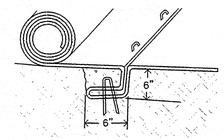


NOTES:
1. In order to contain water, the ends of the sediment fence must be turned uphill (Figures A & C).
2. Long perimeter runs of sediment fence must be limited to 200'. Runs should be broken up into several smaller segments to minimize water concentrations (Figures B & C).
3. Areas should be broken up with interior sediment fence to minimize water concentrations and slow runoff velocities (Figure D).
4. Long slopes should have intermediate rows of sediments fence, not just at the top and toe of the slope (Figure D).
5. Install sediment fence at the top of the slope to slow velocity and volume of water and 6' to 10' away from the toe to create a sediment storage area (Figure E).

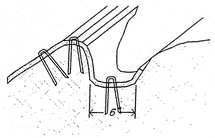
SEDIMENT FENCE LAYOUT

Not to Scale

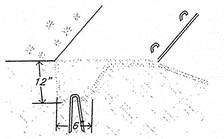




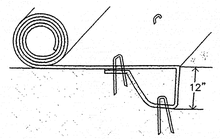
INTERMITTENT CHECK SLOT



LONGITUDINAL ANCHOR TRENCH



TERMINAL SLOPE AND CHANNEL ANCHOR TRENCH



INITIAL CHANNEL ANCHOR TRENCH

NOTE:
All drainage swale flowlines and sideslopes are to be lined with turf reinforcement mat. Contractor to install North American Green C350 (or approved equal) at swale bottoms and to a minimum of 3' above flowline grades. Remaining swale sideslopes are to be lined with North American Green DS150 (or approved equal) to the top of all sideslopes. All installation (check slots, staking, stapling, etc. shall conform to manufacturers specifications and recommendations.

EROSION BLANKETS AND TURF REINFORCEMENT MAT CHANNEL INSTALLATION

Not to Scale

Erosion Control Details

GBA
GEORGE BUTLER ASSOCIATES, INC.
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Kansas • Missouri • Illinois
One Renner Ridge
9801 Renner Boulevard
Lenexa, Kansas 66219–9745
(913) 492–0400

Site Construction Plans for:

REPLACEMENT HOSPITAL

LEE'S SUMMIT HOSPITAL–2100 SE Blue Parkway
Southeast Corner of Todd George Road and Shenandoah Drive
Lee's Summit, Missouri

STATE OF MISSOURI
BRADLEY D. BURTON
NUMBER E–19560
REGISTERED PROFESSIONAL ENGINEER

PROJECT NUMBER
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DESIGNED
R.G.Z.
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SHEET TITLE
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29 of 29