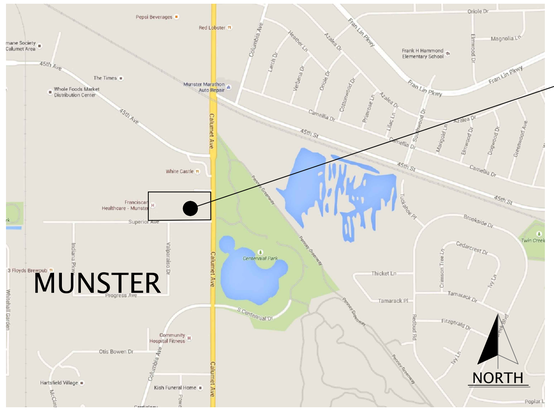
Cancer Treatment Center/M.O.B.
Parking Lot Expansion

Munster, Indiana

Issue for Permit Set - 11/20/2015



Location Map
(No Scale)

BENCHMARKS

1. ***DESCRIPTION***

   ELEVATION = xxx.xx (NAVD88)

PROJECT CONTACTS

SCHOOL DISTRICT
SCHOOL TOWN OF MUNSTER
8616 COLUMBIA AVENUE
MUNSTER, IN 46321

CABLE UTILITY
COMCAST
844 169TH STREET
HAMMOND, INDIANA 46324
866-594-1234

WATER UTILITY
MUNSTER WATER DEPARTMENT
1005 RIDGE ROAD
MUNSTER, INDIANA 46321
219-836-6941

SANITARY SEWER UTILITY
MUNSTER SEWER DEPARTMENT
1005 RIDGE ROAD
MUNSTER, INDIANA 46321
219-836-6971

ELECTRIC & GAS UTILITY
NIPSCO
801 E. 86TH AVE.
MERRILLVILLE, IN 46410
800-464-7726

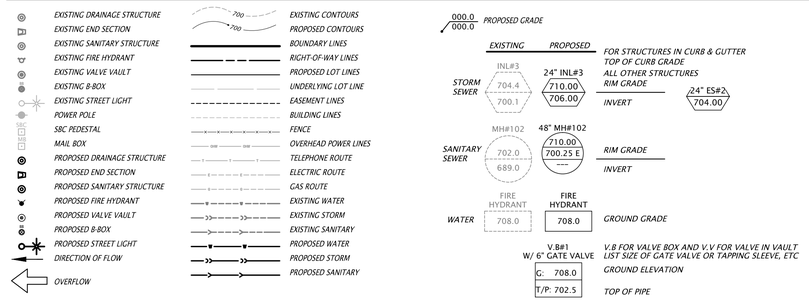
TELEPHONE UTILITY
AT&T
302 S. EAST STREET
CROWN POINT, IN 46307

OWNER
FRANCISCAN ALLIANCE
FRANCISCAN HEALTHCARE-MUNSTER
701 SUPERIOR AVE
MUNSTER, INDIANA 46321

INDEX OF SHEETS

*THE CURRENT TOWN OF MUNSTER ENGINEERING STANDARDS SHALL BE CONSIDERED PART OF THIS PLAN SET.

LEGEND



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DVG # 15-D-1058

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CANCER TREATMENT CENTER/M.O.B
PARKING LOT EXPANSION

ENGINEERING PLANS

SCALE: NTS
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DRAWN BY: DVG
DATE: 11-20-2015

C001

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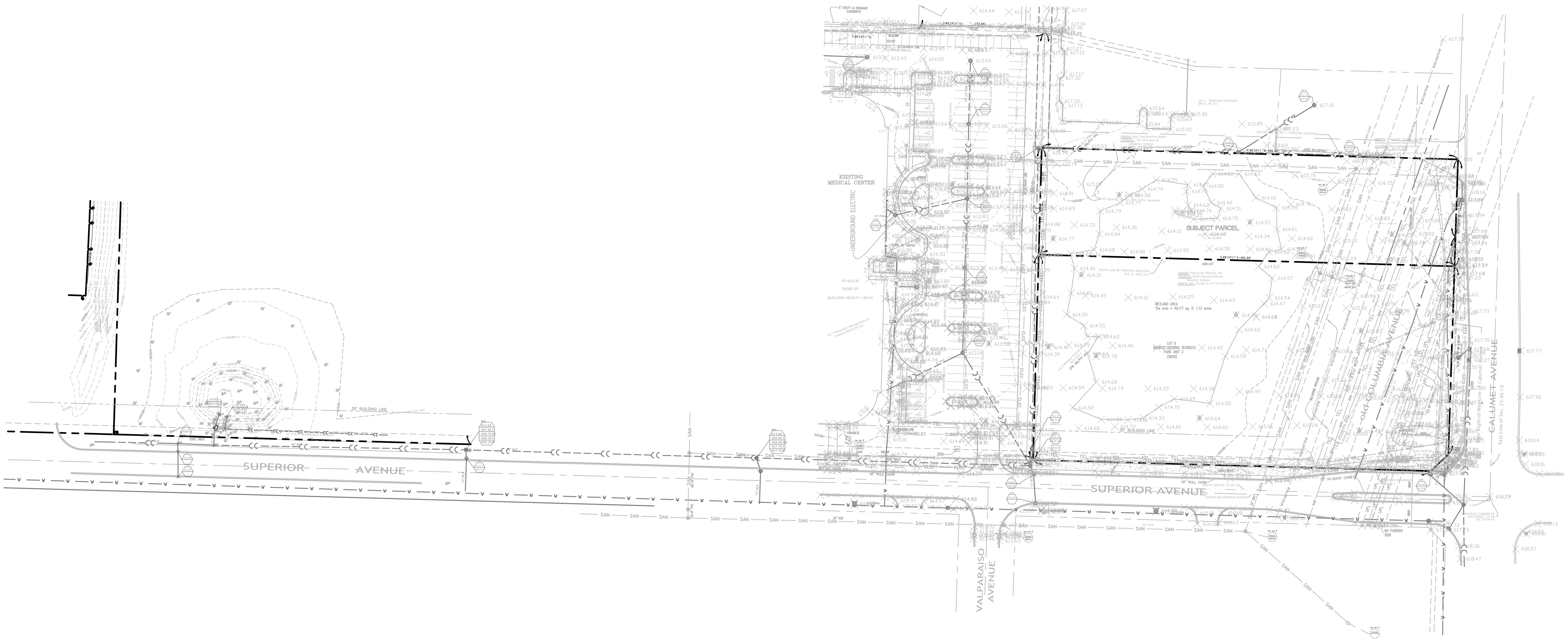

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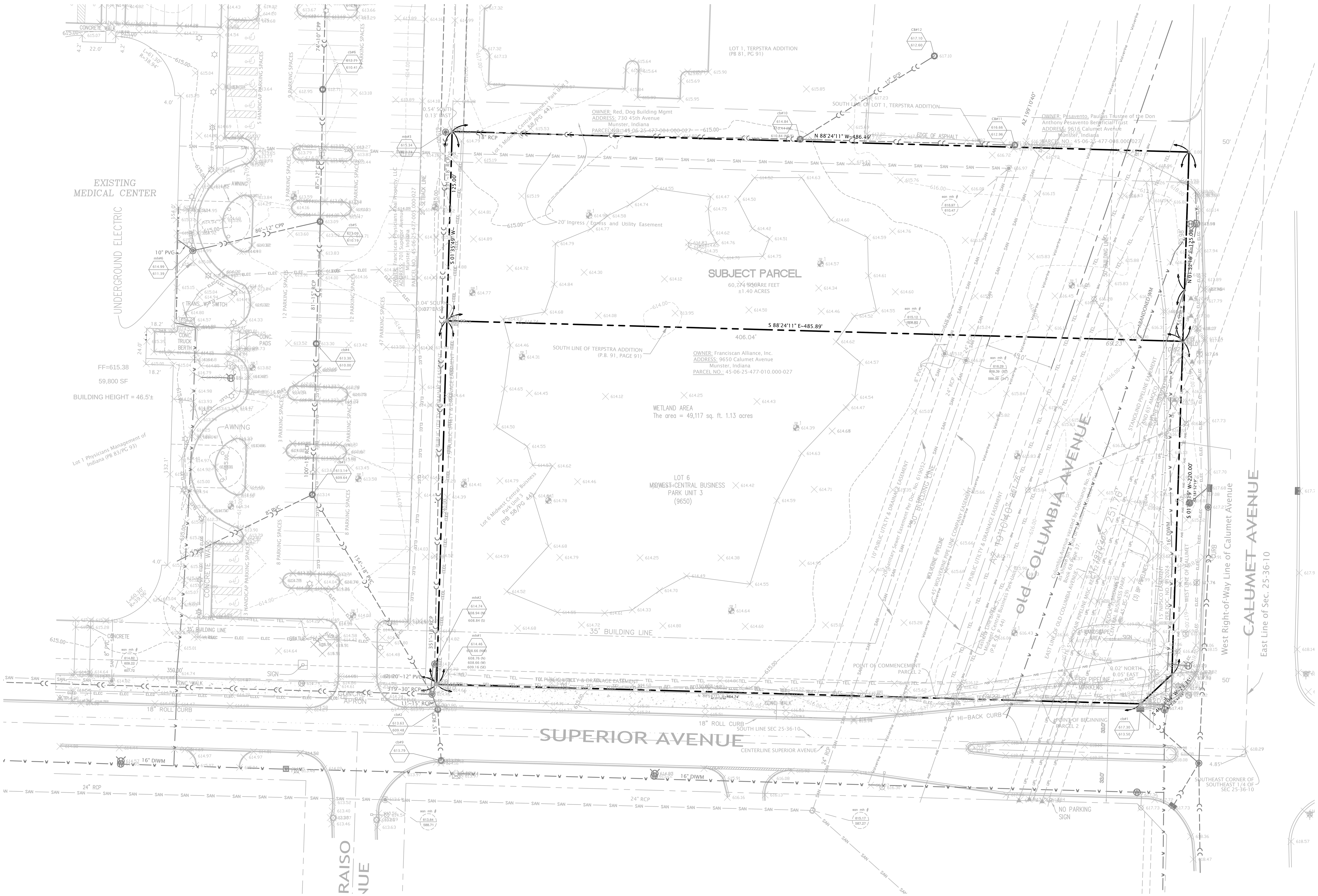
CANCER TREATMENT CENTER/M.O.B PARKING LOT EXPANSION

EXISTING CONDITIONS - OVERALL

SCALE: 1"=60'
DESIGN BY: RJP
DRAWN BY: CC
DATE: 11-20-2015

NORTH

C101



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PARKING LOT EXPANSION

EXISTING CONDITIONS - EAST

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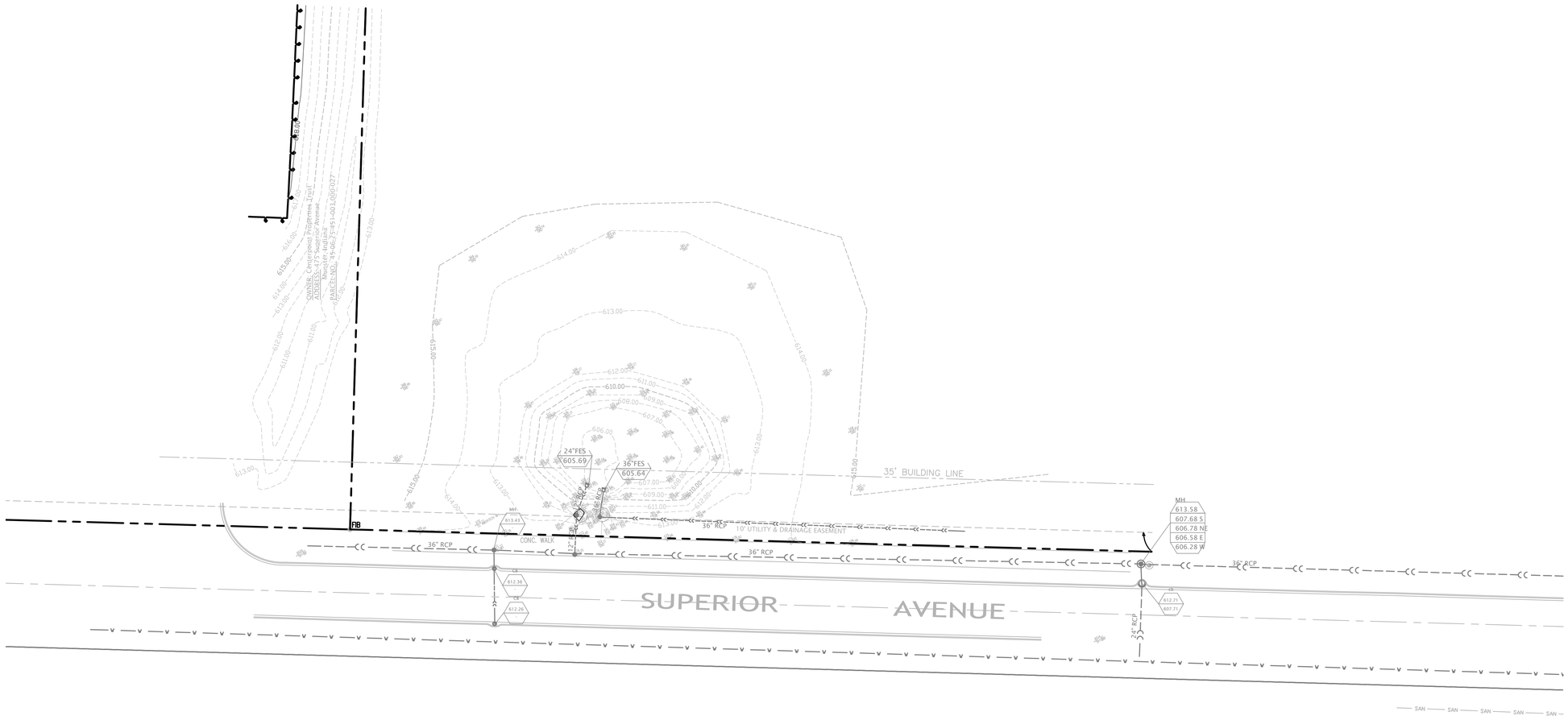
DESIGN BY: RJP
DRAWN BY: CC
DATE: 11-20-2015

NORTH

C102



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CANCER TREATMENT CENTER/M.O.B
PARKING LOT EXPANSION

EXISTING CONDITIONS - WEST

SCALE: 1"=30'
DESIGN BY: RJP
DRAWN BY: CC
DATE: 11-20-2015

NORTH

C103

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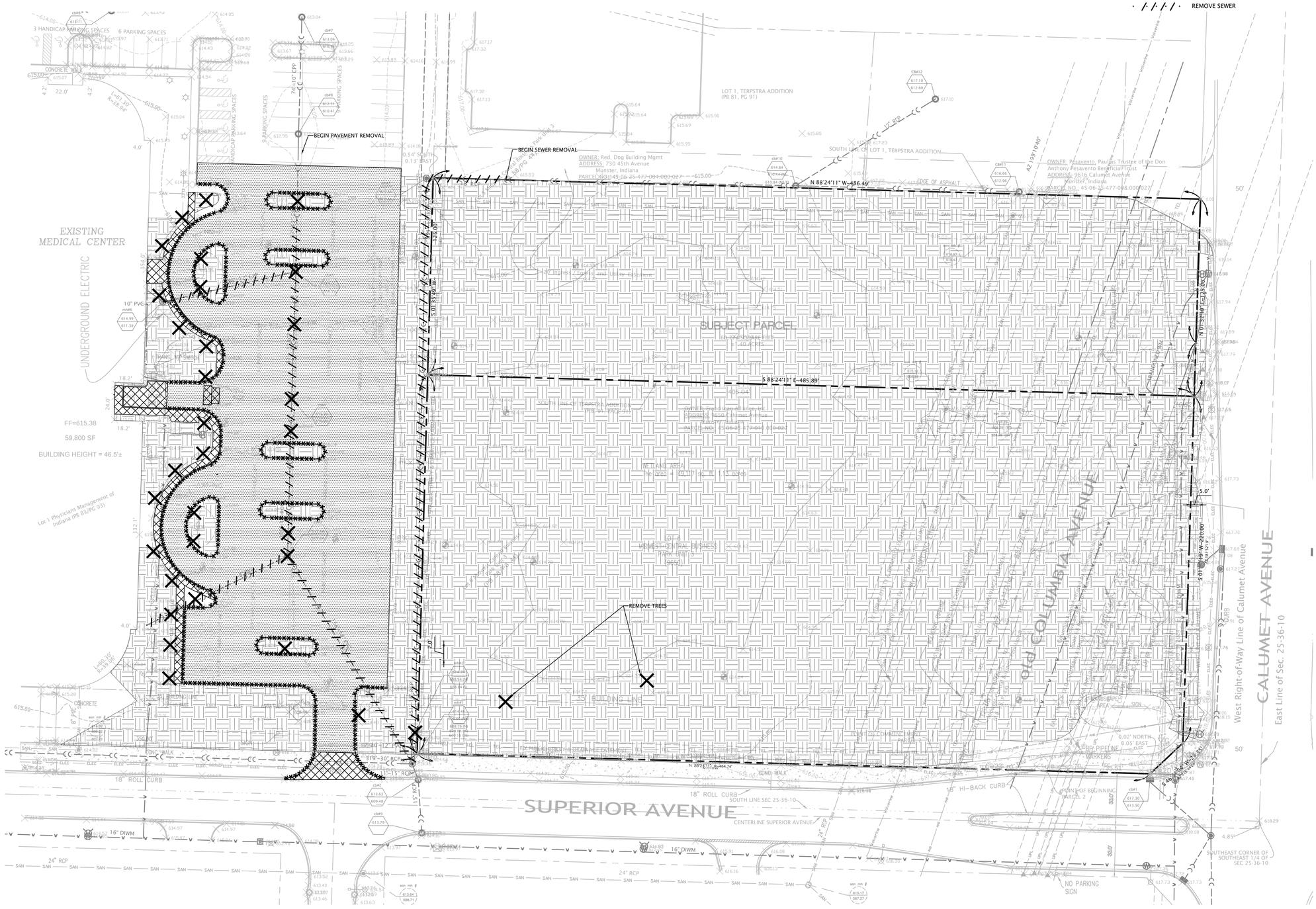
DEMOLITION NOTES

1. NO DEMOLITION SHALL TAKE PLACE UNTIL ALL PERMITS HAVE BEEN ACQUIRED.
2. CONTRACTOR SHALL FIELD-VERIFY SITE CONDITIONS AND INFORMATION ON DRAWINGS. PROMPTLY REPORT ANY CONCEALED CONDITIONS, MISTAKES, DISCREPANCIES, OR DEVIATIONS FROM THE INFORMATION SHOWN IN THE CONTRACT DOCUMENTS. THE OWNER IS NOT RESPONSIBLE FOR UNAUTHORIZED CHANGES OR EXTRA WORK REQUIRED TO CORRECT UNREPORTED DISCREPANCIES.
3. WHERE TREES OR STUMPS ARE TO BE REMOVED, GRIND OUT STUMP TO A DEPTH OF 18 INCHES.
4. "REMOVAL" MEANS REMOVAL OF AN ITEM ABOVE GRADE AND REMOVAL OF ALL ELEMENTS BELOW GRADE INCLUDING, BUT NOT LIMITED TO, FOOTINGS, WIRINGS, AND PIPING THAT ARE IMMEDIATELY ADJACENT TO ITEM BEING REMOVED.
5. AT LIMITS OF ASPHALT REMOVAL, SAW CUT PAVEMENT FULL DEPTH.
6. AT ALL CONCRETE REMOVAL, REMOVE TO NEAREST JOINT.
7. EXISTING MATERIALS TO REMAIN AROUND THE CONSTRUCTION AREA SHALL NOT BE DAMAGED DURING CONSTRUCTION. IF ANY DAMAGE IS MADE, CONTRACTOR IS RESPONSIBLE TO REPAIR OR RESTORE TO THE ORIGINAL CONDITION AT CONTRACTOR'S OWN EXPENSE.
8. REFER TO GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION RELATING TO SUB-SURFACE CONDITIONS.

LEGEND

- REMOVE BITUMWOUS PAVEMENT AND SUB-BASE MATERIAL
- CONTRACTOR TO STRIP AND REMOVE SOD FROM ALL AREAS TO BE REGRADED AND PROPERLY DISPOSE. REMOVE SUBGRADE MATERIAL OR TOPSOIL AS NEEDED
- REMOVE CONCRETE SIDEWALK AND SUB-BASE MATERIAL
- ITEM TO BE REMOVED
- LINEAR REMOVAL ITEM
- REMOVE SEWER



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CANCER TREATMENT CENTER/M.O.B
PARKING LOT EXPANSION

DEMOLITION PLAN - EAST

SCALE: 1"=30'
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DRAWN BY: CC
DATE: 11-20-2015

NORTH

C104

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DEMOLITION NOTES

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LEGEND

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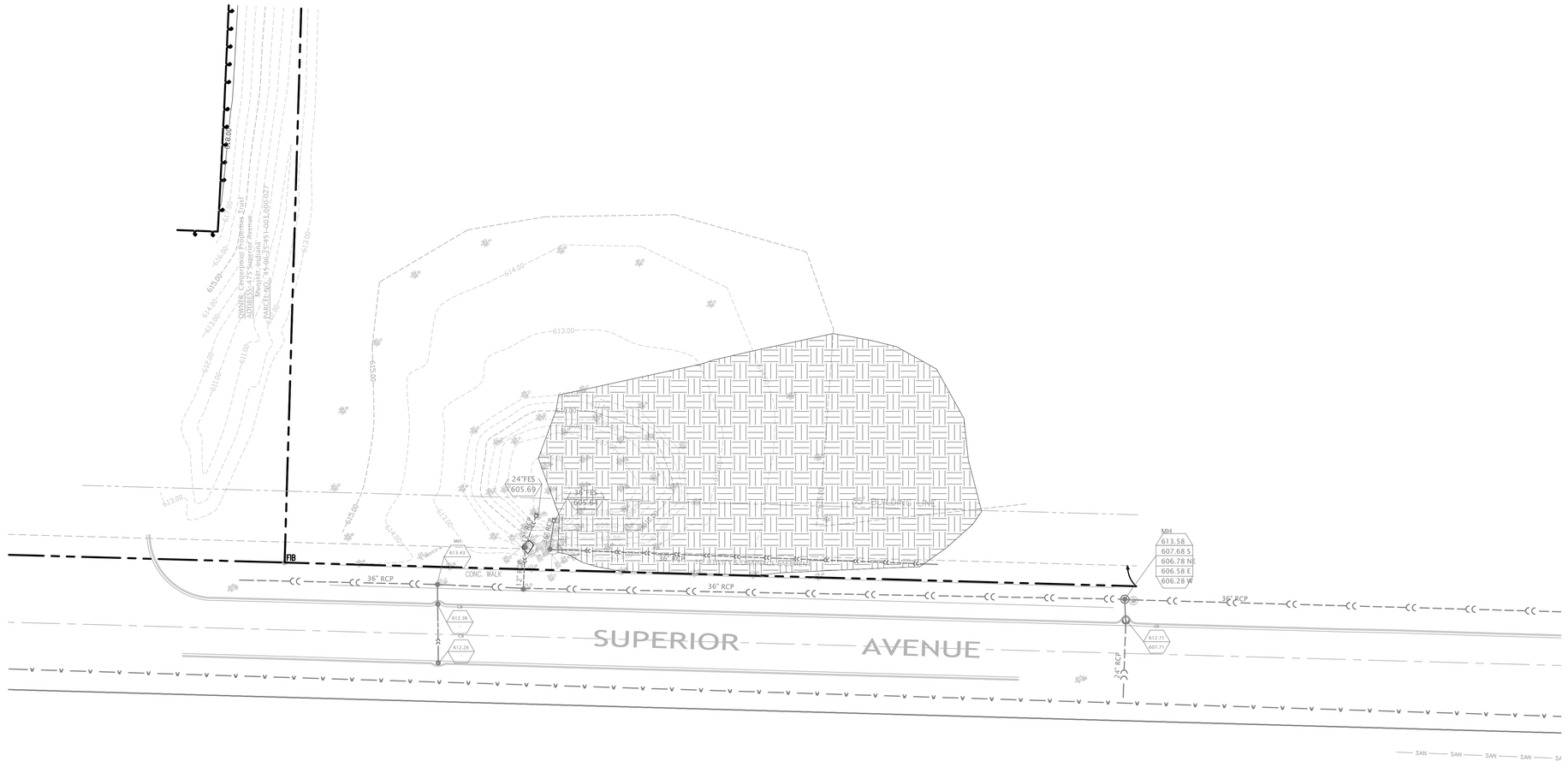
- REMOVE CONCRETE SIDEWALK AND SUB-BASE MATERIAL
- ITEM TO BE REMOVED
- LINEAR REMOVAL ITEM
- REMOVE SEWER



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CANCER TREATMENT CENTER/M.O.B
PARKING LOT EXPANSION

DEMOLITION PLANS - WEST

SCALE: 1"=30'
DESIGN BY: RJP
DRAWN BY: CC
DATE: 11-20-2015

NORTH

C105

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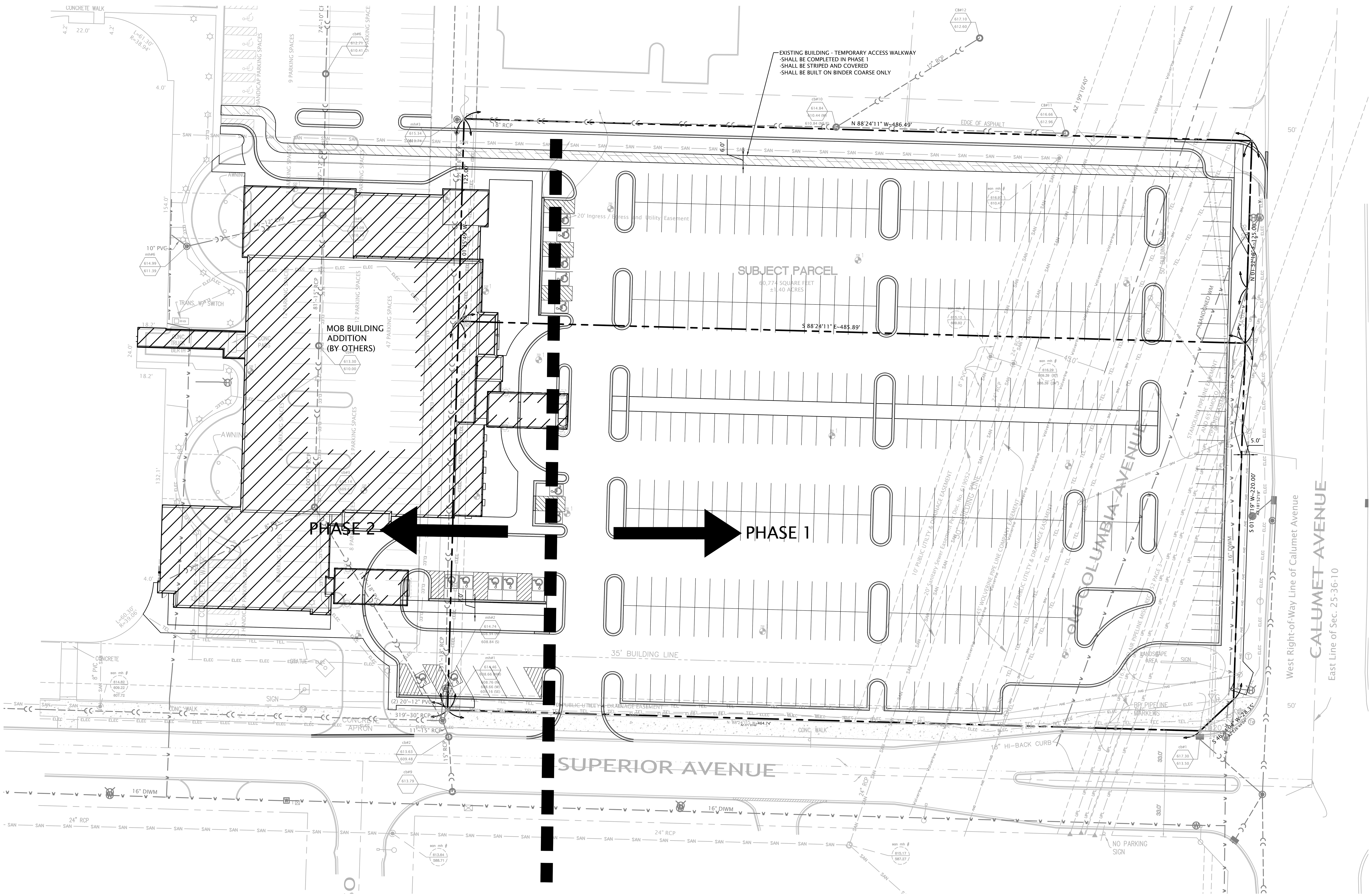

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CANCER TREATMENT CENTER/M.O.B PARKING LOT EXPANSION

PHASING PLAN

SCALE: 1"=30'
DESIGN BY: RJP
DRAWN BY: CC
DATE: 11-20-2015

NORTH

C106

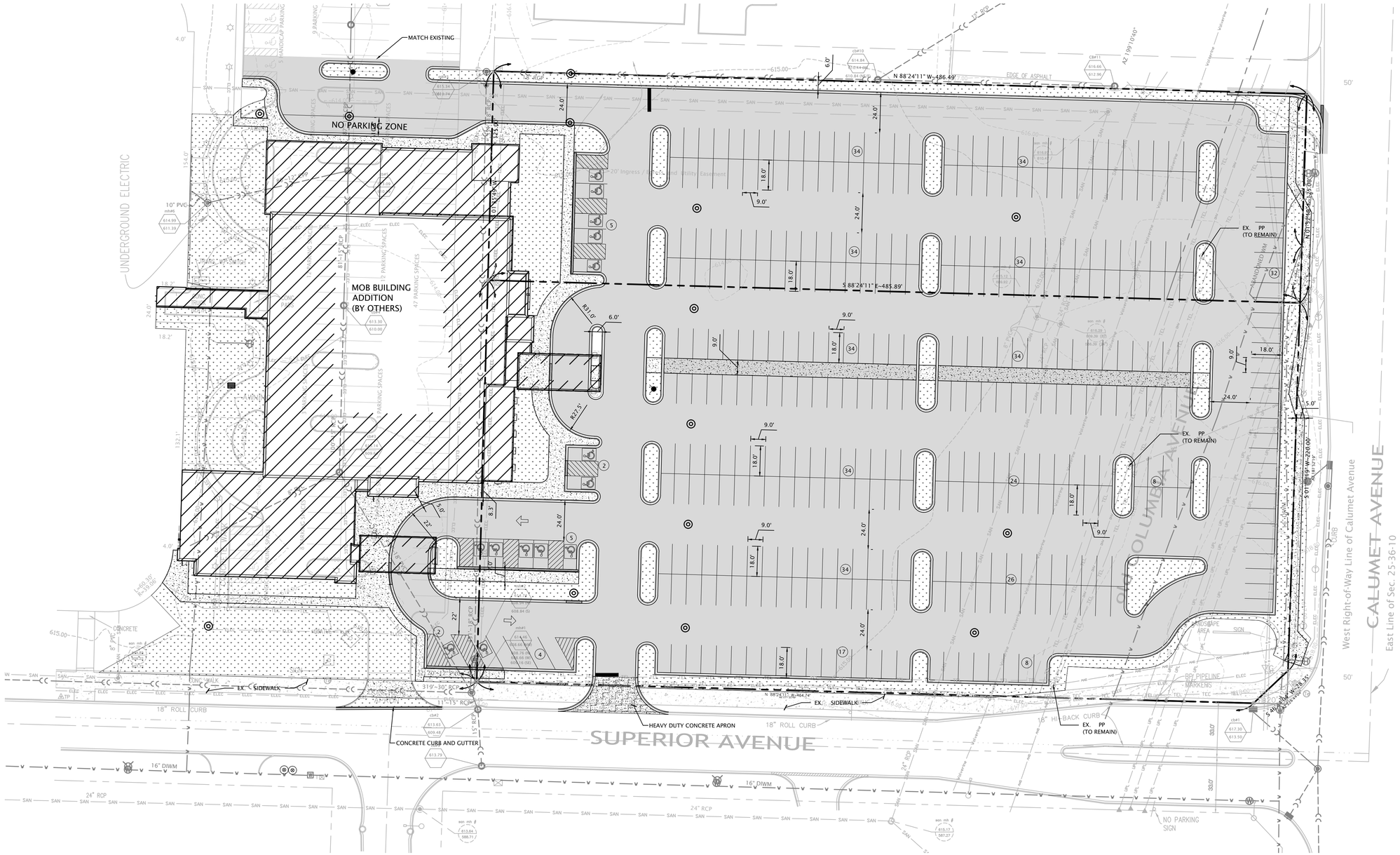
SITE REQUIREMENTS SUMMARY

PARKING REQUIRED: 340 SPACES
PARKING PROVIDED: 391 SPACES + 14 ADA SPACES = 405 SPACES

PARKING LOT LANDSCAPING REQUIRED: 11,234 SF
PARKING LOT LANDSCAPING PROVIDED: 6,964 SF (INTERIOR) +10,522 SF (EXTERIOR)=17,486 SF

LEGEND

- NEW CONCRETE SIDEWALK
- NEW ASPHALT PAVEMENT
- NEW HEAVY DUTY CONCRETE PAD
- LANDSCAPING (SEE LANDSCAPE PLAN)
- CONCRETE CURB AND GUTTER (6" HIGH)
- DEPRESSED CURB AND GUTTER
- 4" WIDE PAINTED WHITE SOLID LINE



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PARKING LOT EXPANSION

SITE PLAN - EAST

SCALE: 1"=30'
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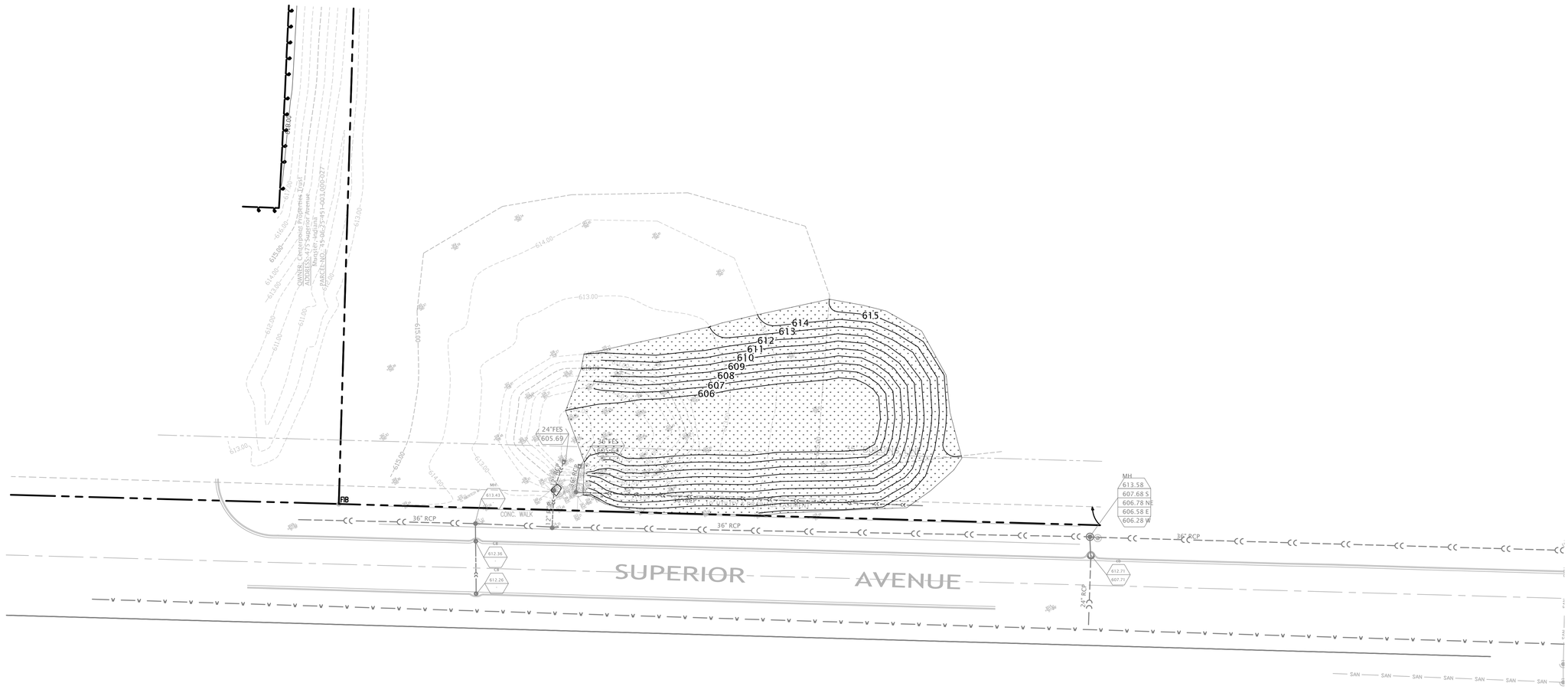
DATE: 11-20-2015

NORTH

C107

LEGEND

LANDSCAPING
-BLANKETED SEEDING (NO IRRIGATION)



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CANCER TREATMENT CENTER/M.O.B
PARKING LOT EXPANSION

SITE PLAN - WEST

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NORTH

C108

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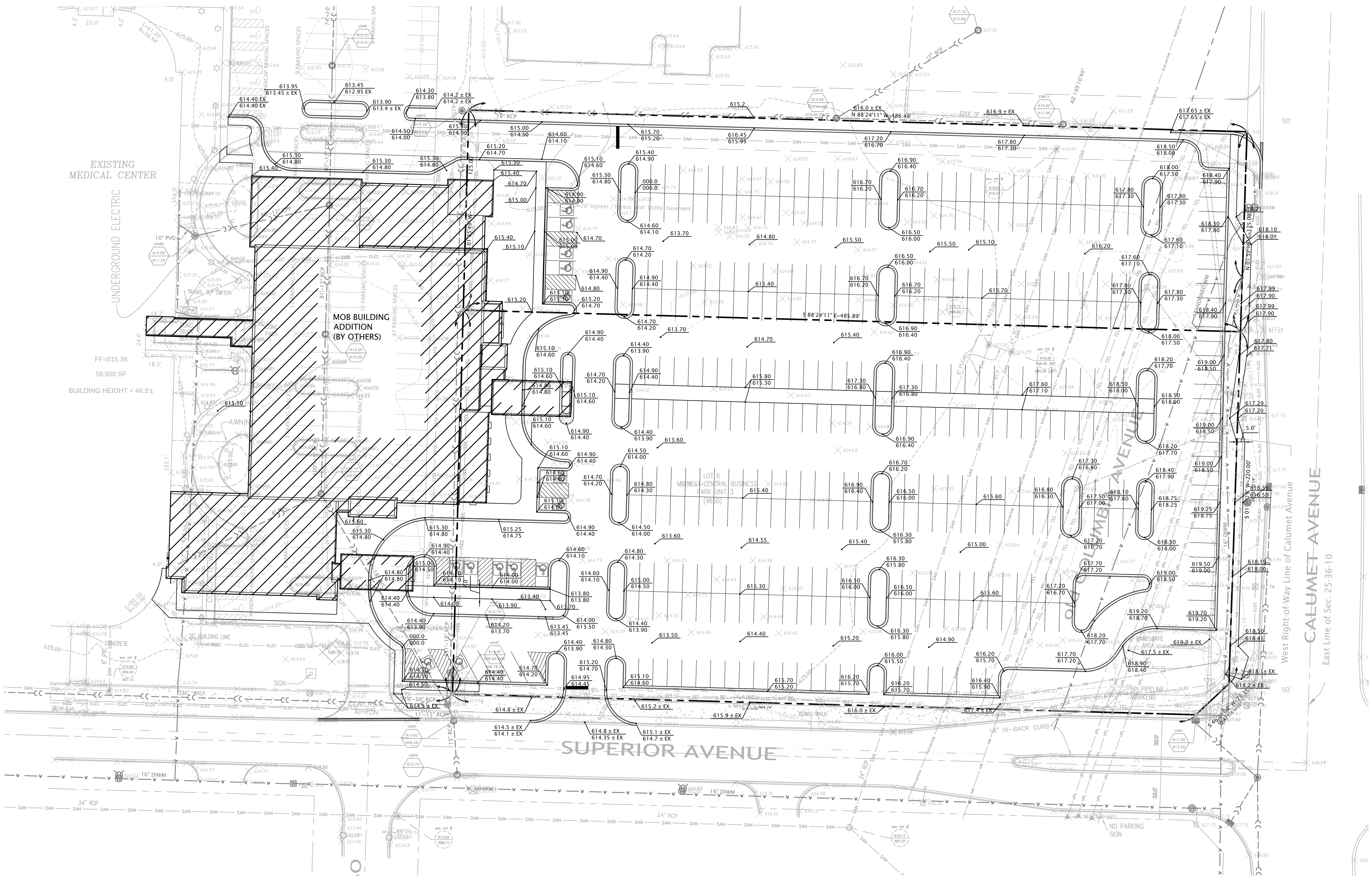

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PARKING LOT EXPANSION

GRADING PLAN - EAST

SCALE: 1"=30'
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NORTH

C109

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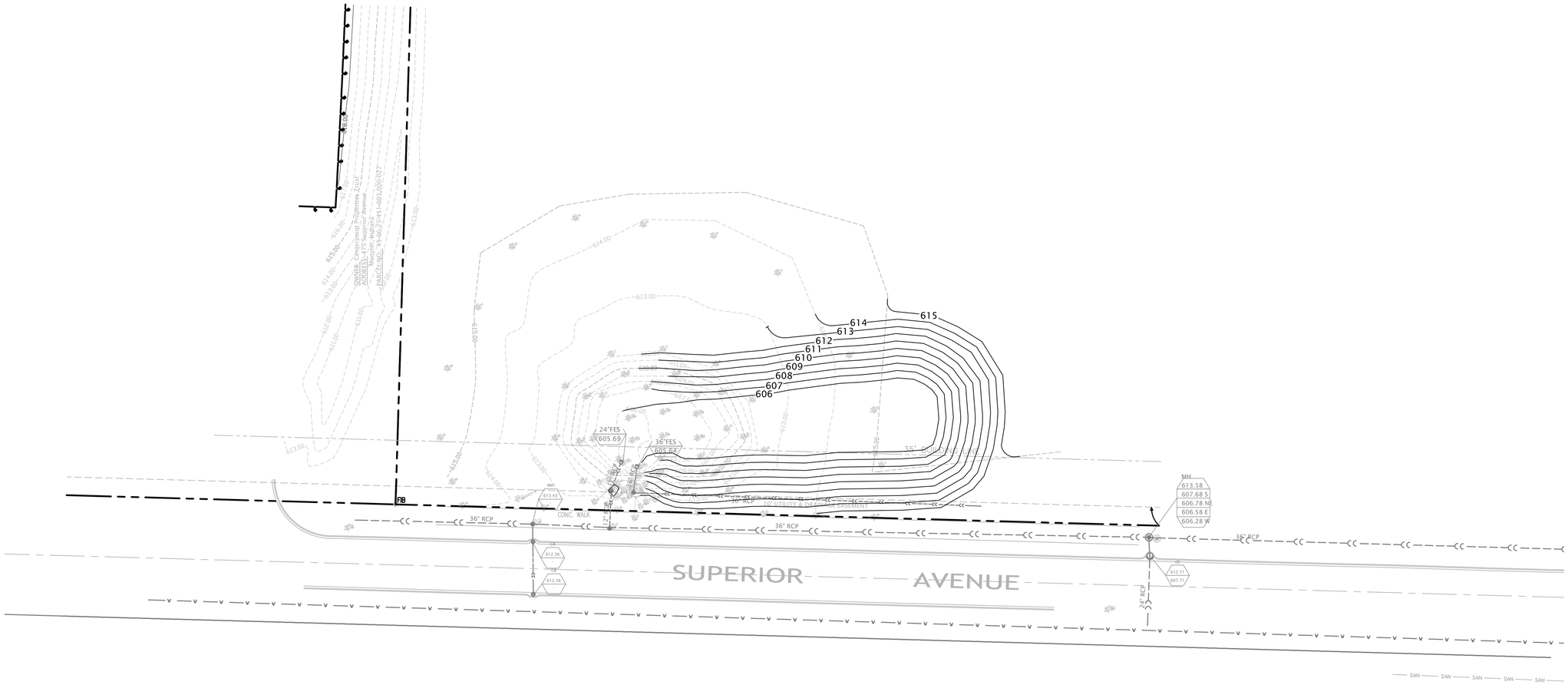

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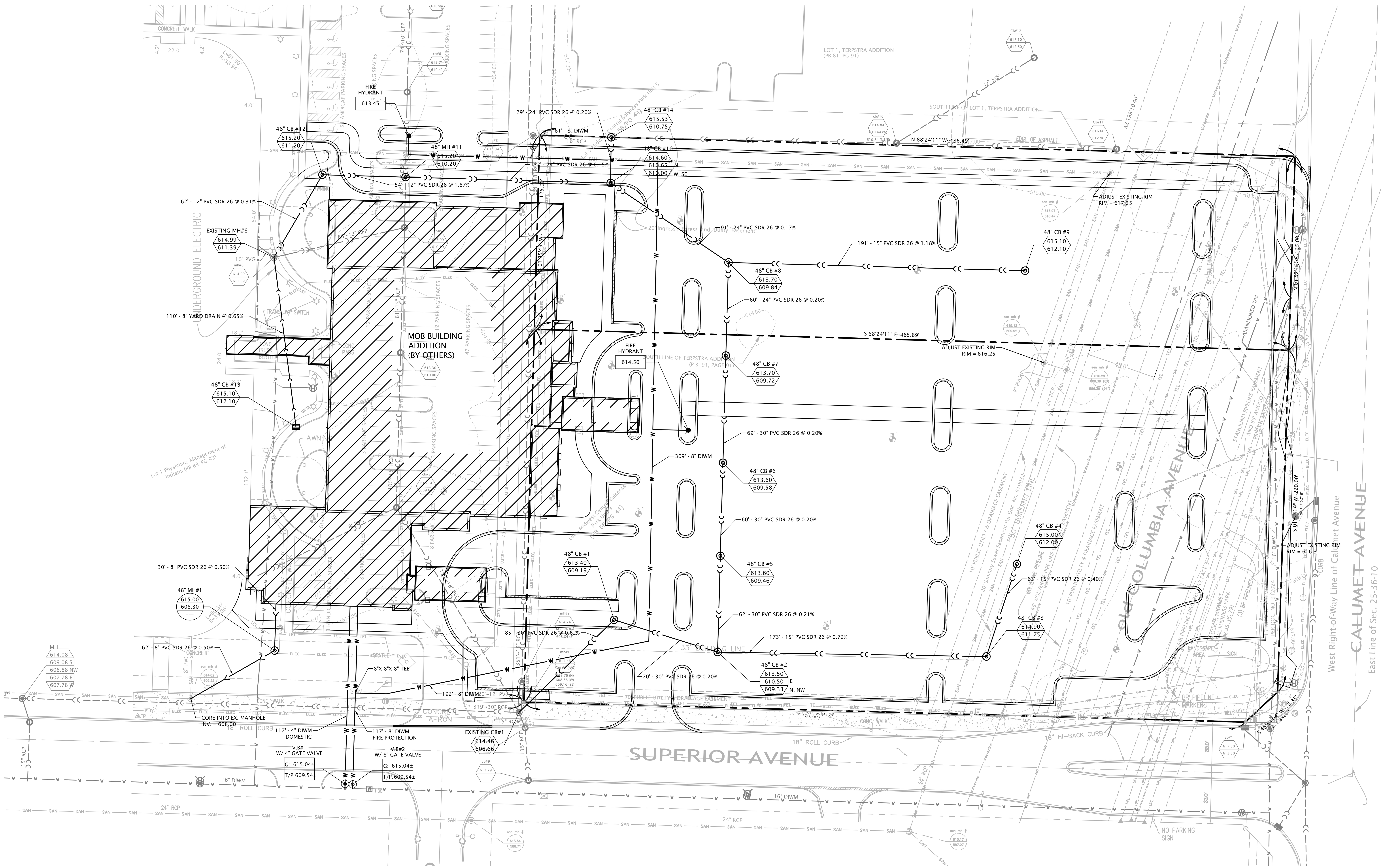
PARKING LOT EXPANSION

GRADING PLAN - WEST

SCALE: 1"=30'
DESIGN BY: RJP
DRAWN BY: CC
DATE: 11-20-2015

NORTH

C110



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CANCER TREATMENT CENTER/M.O.B
PARKING LOT EXPANSION

UTILITY PLAN - EAST

SCALE: 1"=30'
DESIGN BY: RJP
DRAWN BY: CC
DATE: 11-20-2015

NORTH

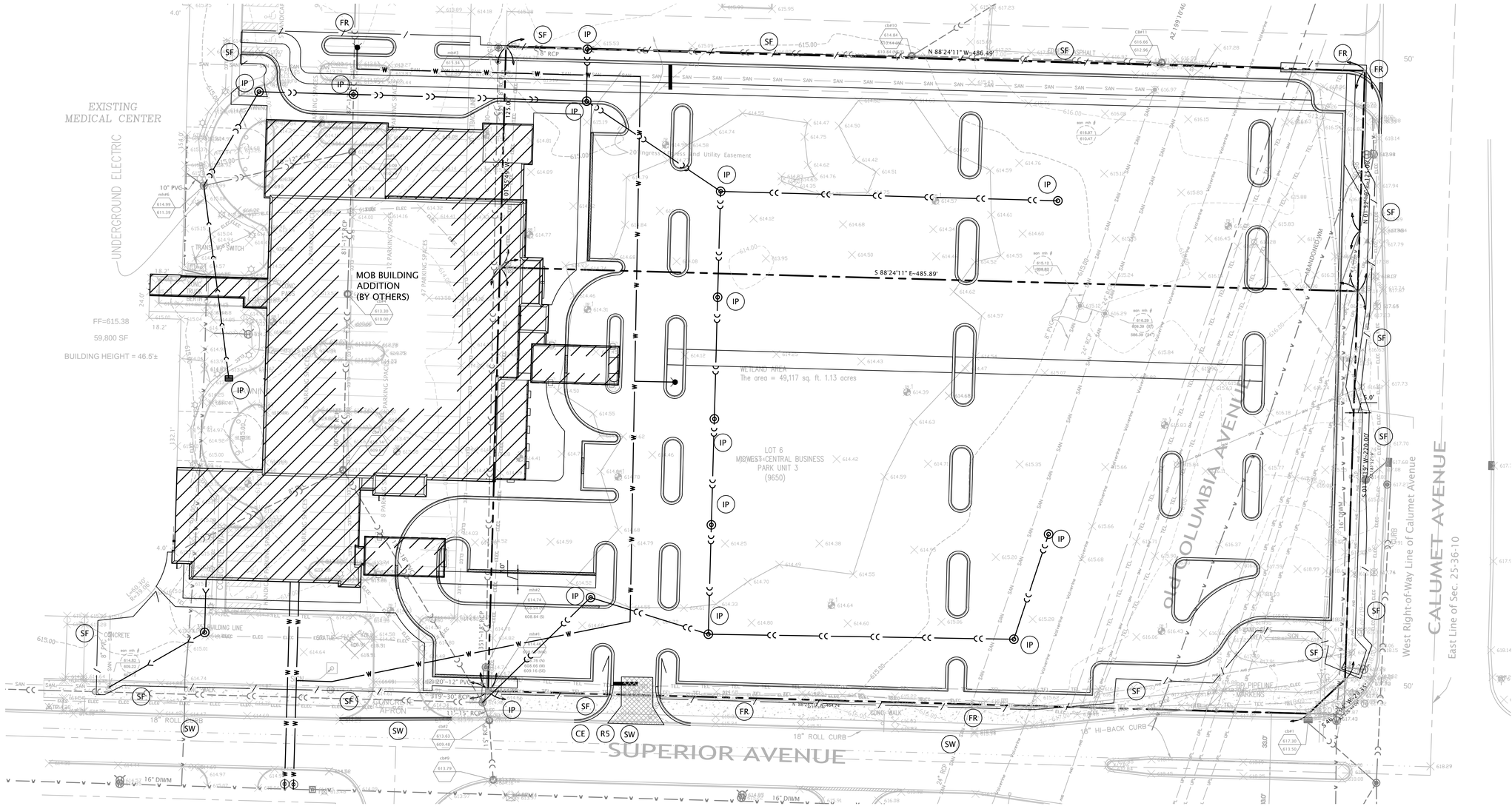
C111

NOTES

1. THE SITE CONTRACTOR SHALL PROVIDE EROSION CONTROL MEASURES IN ACCORDANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN DURING DEMOLITION AND CONSTRUCTION ACTIVITIES.
2. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE AND/OR CLEANING TO THE STRUCTURE OR FEATURE. CORRECTIVE WORK INCURRED BY THE CONTRACTOR SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
3. THE CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH THE S.W.P.P.P. ANY FINES OR PUNITIVE MEASURES INCURRED BY THE PROJECT DUE TO FAILURE TO COMPLY WITH THE S.W.P.P.P. ARE THE RESPONSIBILITY OF THE CONTRACTOR. THESE COSTS SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND SHALL NOT BE CONSIDERED AN EXTRA.
4. DURING THE COURSE OF CONSTRUCTION, THE LOCAL ENFORCEMENT OF THE S.W.P.P.P. MAY REQUIRE ADDITIONAL EROSION CONTROL MEASURES TO BE INSTALLED TO ADDRESS SITE-SPECIFIC ITEMS NOT ANTICIPATED BY THIS PLAN. THESE ITEMS ARE CONSIDERED AN EXTRA TO THE CONTRACT, BUT ONLY TO THE EXTENT OF INITIAL INSTALLATION. CORRECTIVE WORK AND MAINTENANCE SHALL BE CONSIDERED INCIDENTAL AND SHALL NOT BE CONSIDERED AN EXTRA.
5. THE SITE CONTRACTOR SHALL INSTALL THE CONSTRUCTION ENTRANCE, POST THE RULE 5 AND PLACE PERIMETER SILT FENCING PRIOR TO COMMENCING ANY SOIL DISTURBANCE. SEE SITE PLAN FOR LOCATIONS.
6. DURING SOIL-DISTURBING ACTIVITIES, THE CONTRACTOR SHALL CREATE DIVERSION SWALES AND INSTALL DITCH CHECKS SO THAT ALL SITE RUNOFF PASSES THROUGH AN EROSION CONTROL MEASURE PRIOR TO BEING DISCHARGED OFF-SITE.
7. UPON COMPLETION OF THE ROUGH GRADING, ALL AREAS AFFECTED BY CONSTRUCTION SHALL BE TEMPORARILY SEEDED WITHIN 14 DAYS AND EROSION CONTROL BLANKETS INSTALLED ON SIDE SLOPES THAT EXCEED 5:1.
8. UPON COMPLETION OF THE STORM SEWER SYSTEM, INLET PROTECTION SHALL BE INSTALLED, CHECK DAMS INSTALLED IN THE SWALES, AND TEMPORARY RIP-RAP WITH SETTLING BASINS PLACED AT THE OUTFALLS OF ALL PIPE.
9. CONTRACTOR SHALL PERFORM STREET SWEEPING WHENEVER TRACKING OF MUD, DIRT, AND CONSTRUCTION DEBRIS OCCURS ON THE PUBLIC ROAD.

LEGEND

- (CE) TEMPORARY CONSTRUCTION ENTRANCE
- (IP) INLET BARRIER PROTECTION
- (TS) TEMPORARY/PERMANENT SEEDING
- (SF) SILT FENCE
- (SW) STREET SWEEPING SHALL BE PERFORMED WHENEVER TRACKING OF MUD, DIRT, CONSTRUCTION DEBRIS OCCURS ON THE PUBLIC ROAD
- (R5) POSTED RULE 5 NOI FORM, SWPPP APPROVAL LETTER AND IDEM NOI PERMIT NUMBER
- (FR) FIBER ROLLS
- (SD) SILT DIKE (OR GEO RIDGE)
- (EB) EROSION CONTROL BLANKET
- (CW) CONCRETE WASHOUT
- (SP) TOPSOIL STOCKPILE



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CANCER TREATMENT CENTER/M.O.B
PARKING LOT EXPANSION

STORM WATER POLLUTION PREVENTION PLAN

SCALE: 1"=30'
DESIGN BY:RJP
DRAWN BY:CC
DATE:11-20-2015
NORTH

C112

Not for Construction

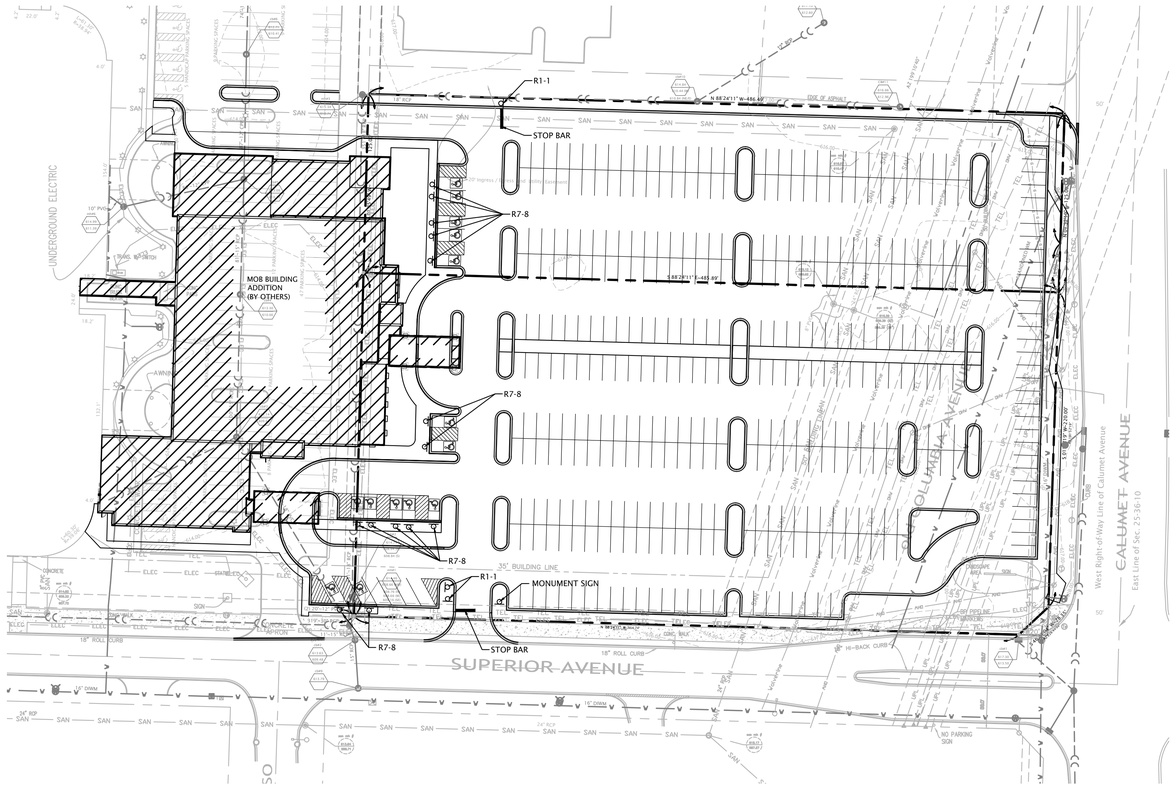
SIGN LEGEND

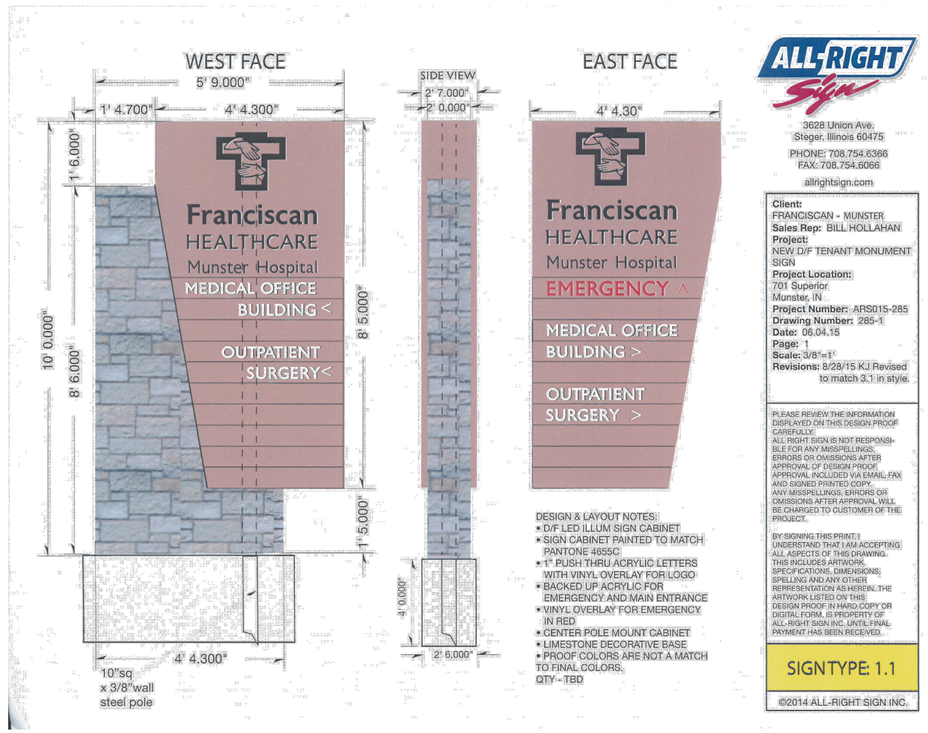
R2-1

W11-2

R1-1

USDOT STANDARD R7-8 SIGN





MONUMENT SIGN

DVG Inc.
Project Management and Development Consulting
11065 Broadway, Suite D
Crown Point, IN 46307
(219) 662-7710 Fax (219) 662-2740

NOT FOR CONSTRUCTION

FRANCISCAN ALLIANCE
FRANCISCAN HEALTHCARE-MUNSTER
701 SUPERIOR AVENUE
MUNSTER, IN 46321

DVG # 15-D-1058

REVISIONS AND NOTES:	DATE:

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CANCER TREATMENT CENTER/M.O.B
PARKING LOT EXPANSION

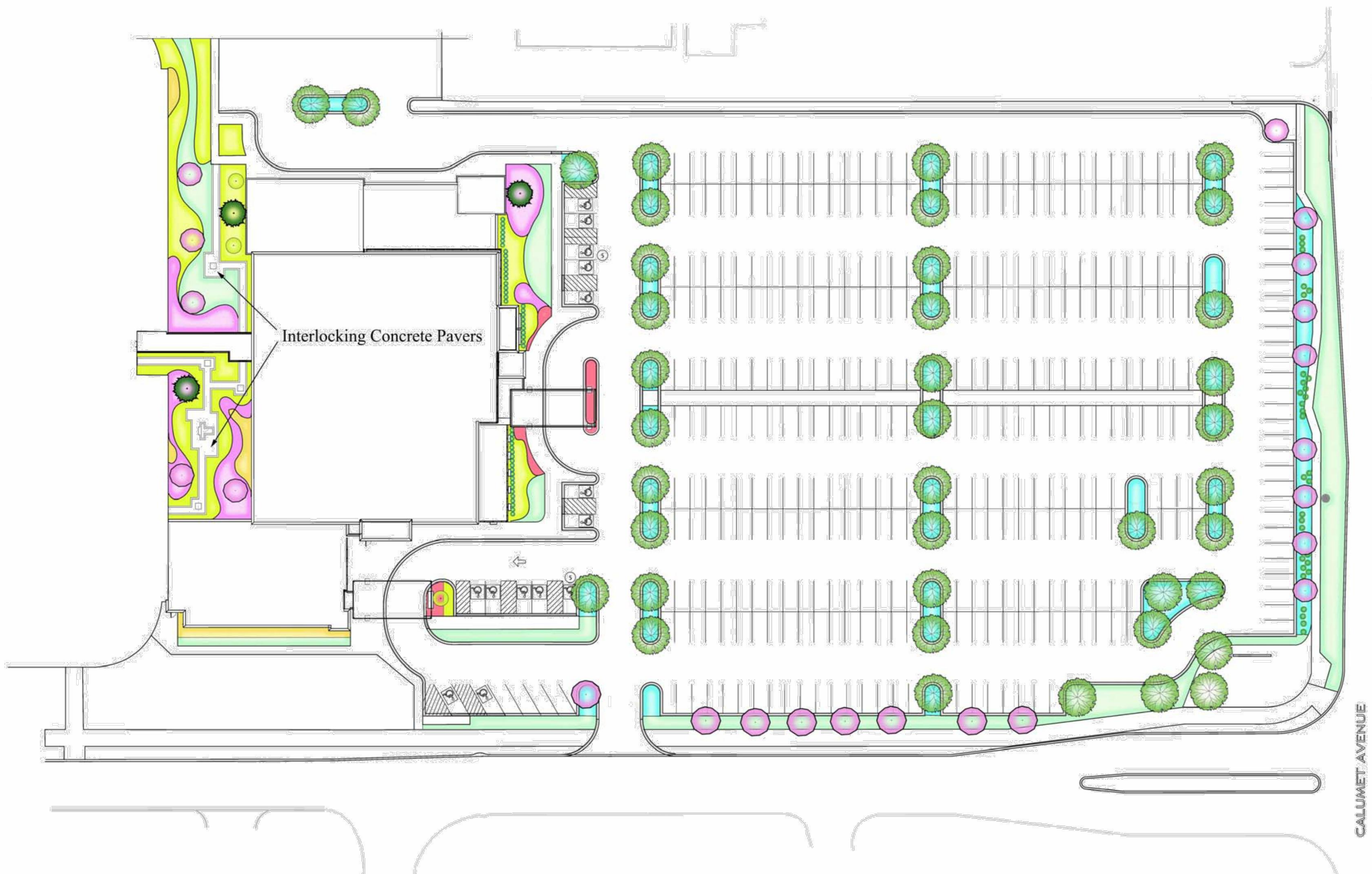
SITE SIGNAGE PLAN

SCALE: 1"=50'
DESIGN BY: RJP
DRAWN BY: CC
DATE: 11-20-2015

NORTH

C113

Not for Construction



Plant Legend

- **Shade Trees** - 2.5 to 3" caliper : Swamp White Oak, Kentucky Coffee Tree, Red Maple, Honeylocust, Sour Gum
- **Ornamental Trees** - 2 to 3" caliper: Serviceberry, Tree Lilac, American Hornbeam, Eastern Redbud
- **Evergreen Trees** - 7 to 8' tall : Concolor Fir, Hemlock
- **Dwarf Trees** - 4-5' tall : Japanese Maple, Lentago Viburnum, Witchhazel
- **Dwarf Evergreen Shrubs** - 18": Boxwood (hardy varieties)
- **Salt-Tolerant Shrubs** - 18" height: Winterberry, Hydrangea, Chokeberry, Bayberry
- **Blanketed Seeding** (Areas NOT in the R.O.W to be irrigated)
- **Annual Flowers**
- **Flowering Perennials** (1gallon containers 18" o.c.)
- **Salt -Tolerant Perennials** (1gallon containers 18" o.c.)
- **Ornamental Grasses** (2gallon containers 24" o.c.)
- **Low Profile Groundcover and Flowering Perennials** (1gallon containers 18" o.c.)

The undersigned landscape architect, registered in the State of Indiana, acknowledges that the landscape planting plan and construction details shown on the attached landscape plans for the property at 701 SUPERIOR AVENUE Town of Munster, Indiana has been designed in accordance with the requirements of the Town of Munster Municipal Code, the landscaping standards of the Town of Munster Zoning Ordinance, and the Guide to the Town of Munster Landscape Ordinances

Franciscan Healthcare

MOB Addition - Parking Lot Expansion 11-18-15

NORTH

SCALE: NTS

LAKESHORE LANDSCAPING, INC.

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701 SUPERIOR AVENUE
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CANCER TREATMENT CENTER/M.O.B PARKING LOT EXPANSION

LANDSCAPE PLAN

SCALE: NTS
DESIGN BY: RJP
DRAWN BY: CC
DATE: 11-20-2015

NORTH

L101

SITE DEVELOPMENT GENERAL NOTES

1. The Town of Munster, Development Visions Group (Engineer) and any Utility Company affected must be notified at least two working days prior to commencement of work. Prior to construction the contractor is to call Indiana 811 toll free at 1-800-382-5544.

2. Elevation Datum is U.S.G.S.

4. The locations of existing underground utilities, such as water mains, sewer, gas lines, etc., as shown on the plans have been determined from the best available information and is given for the convenience of the contractor. However, the engineer and the owner do not assume responsibility for the accuracy of the locations shown. It shall be the responsibility of the contractor to contact all utility companies and their facilities shall be located prior to commencement of any work.

5. Wherever obstructions not shown on the plans are encountered during the progress of the work and interfere to such an extent that alteration in the plans is required, the engineer shall be notified prior to any changes and any changes shall only be as approved via written instruction by the Engineer and also the local Municipal Engineer.

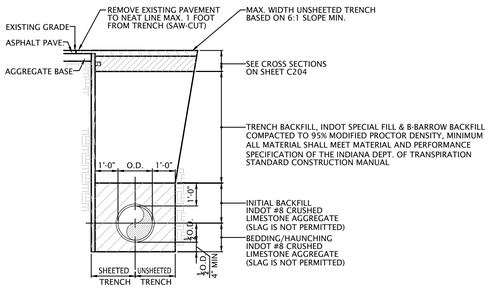
6. As-built drawings shall be prepared by the contractor and submitted to the engineer as soon as the project is completed. Any change in the length, location or alignment shall be shown in red. "AS BUILT" drawings shall be forwarded to the appropriate utility organizations. Four (4) copies shall be submitted to the Town Engineer.

7. All proposed sanitary sewer, storm sewer, water main and service lines under and within 5' of pavement, curbs, and sidewalk shall be backfilled with crushed limestone (gradation #53) or material consistent with Class I or II material as described in ASTM D2231 placed in 8" maximum layers and mechanically compacted to 95% modified proctor density slag is not permitted.

8. Materials used for water, sanitary sewer, storm sewer and streets shall conform to the Town of Munster standards and specifications.

9. Any existing public improvements (sidewalks, curb and gutter, etc.), disturbed during construction shall be replaced in kind, or per current Town of Munster specifications as directed by the Town of Munster engineer.

10. All public street construction shall meet performance standards of the current edition of the Indiana Department of Transportation Standard Specifications.



PIPE BEDDING/TRENCH BACKFILL DETAIL

ALL TRENCHES

COMMON EXCAVATION AND EARTHWORK GENERAL NOTES

1.0 Quality Assurance:
1. Contractor shall notify the Construction Manager, Architect, Engineer and testing laboratory inspector when common excavation and earthwork is scheduled. Earthwork operations which require inspecting and testing by testing laboratory inspector shall not be performed unless testing laboratory inspector is present.
2. Contractor shall provide a 1-year warranty against settlement and damage caused by settlement for common excavation and earthwork.
3. If settlement occurs within 1 year after the date of Substantial Completion, the Contractor shall remove the affected surface feature, provide additional suitable fill, thoroughly compact and restore the surface feature to its original undisturbed condition.

2.0 Testing:
1. An inspector from the Owner's soils testing laboratory shall, during the common excavation work operations, provide the following services:
   a. Test & Classify on-site excavated soils for reuse as topsoil, common site fill, embankment fill and structural fill.
   b. Test materials furnished from any off-site sources to verify compliance with specified requirements.
   c. Observe proofing rolling of exposed subsoil in areas where grades will be raised and provide recommendations for soil correction to ensure that unstable materials have been removed.
   d. Inspect placement and compaction of common site fill, embankment fill and structural fill to ensure the material being compacted is in accordance with specified requirements. For each lift, a minimum of 1 density test for every 10,000 square feet of lawn surface area, and 5,000 square feet of paved surface area, and 500 square feet of proposed building area is required.
   e. Density tests are required for all subgrade/subsoil in areas that have been cut to rough grade elevations, after soils have been compacted to ensure soil compaction density is in accordance with the specified requirements. Test frequency shall be as described above in sub-paragraph 1.d..
2. Tests and analysis of fill materials shall be performed in the laboratory in accordance with ASTM D1557.
3. Testing shall be performed as directed by the Soils Report Engineer. Compaction Testing shall be performed in accordance with ASTM D2922 and D3017.

3.0 Special Weather Protection:
1. Construction shall be limited during cold weather to prevent the formation of frost and snow accumulation to occur in materials used for site fill or in soils where site excavation is taking place. All areas that are scheduled for excavation activity shall be protected from freezing and snow accumulation. Any frozen material shall be removed and disposed of off site.

4.0 Clearing & Grubbing:
1. Contractor shall provide all clearing, grubbing, removal and disposal of all vegetation and debris related to the existing site conditions.
2. Vegetation debris shall be removed from site and transported to a local and state authorized disposal sites.

5.0 Top Soil Stripping:
1. The project assumes a depth of topsoil variation throughout the site of approximately 12-inches. The Contractor shall strip and stockpile all topsoil at the location designated in the Site Development Drawings.
2. Topsoil removal material shall consist of fertile, friable, organic surface soil stripped from the site and shall be free of subsoil, brush, turf grasses, weeds, roots, stumps, stones larger than 1-inch in diameter and other contaminated matter."
3. Topsoil shall be stockpiled so that it may be reused and re-spread on site over Lawn and Landscaped areas.
4. The topsoil stockpile area shall be properly protected against soil erosion into the adjacent drainage system.

6.0 Borrow Material/Embankment & Structural Fill Material:
1. Borrow material for structural fill shall be first excavated from on site source locations as defined by the Soils Report Engineer.
2. Structural fill material shall be placed under all utility trench corridors, building pad locations, paved parking, driveway, sidewalk and roadway areas.
3. Common site and embankment fill shall be placed under lawn, landscape and detention pond areas.
4. Maintain moisture content of structural fill within plus or minus 3 percent of the optimum moisture content as determined by the Modified Proctor Test.
5. Contractor shall provide subgrade conditions meeting the design grades for pavements, exterior walks, curbs and building pads.
6. Contractor shall only place approved fill material under proposed building pads and parking areas
7. Contractor shall undercut any areas that do not meet the requirements for structural fill and shall replace with structural fill.

7.0 Excavation:
1. Protect all existing natural features on site.
2. Install soil erosion prevention measures in accordance with local and state ordinances and in accordance with the soil erosion control project drawings.
3. All proposed contours shown on this set of plans are proposed subgrade. All fill shall be placed as structural fill for buildings and parking lots.

8.0 Compaction:
1. Exercise care when compacting exposed soils relative to water table, rain or other moisture conditions.
2. Maintain moisture content of embankment material and structural fill material near optimum as recommended by the soils testing laboratory and Soil Boring Engineer. Maintain optimum moisture content of backfill and fill material to attain the required compaction density.
3. Backfill common site fill, embankment fill, structural fill and utility trenches to contours and elevations defined on the project site development plans.
4. Systematically backfill to allow maximum time for optimum compaction and do not backfill over porous, wet or spongy subgrade surfaces.
5. Employ a soils placement and compaction method that does not disturb or damage work performed and that maximizes soil compaction.
6. All common site, embankment and structural fill shall be place and compacted in continuous layers/lifts not exceeding 8-inches loose depth.
7. Compact subsoil for structural fill to 97% of the Modified Proctor Maximum Dry Density (ASTM D1557) beneath all building pad locations.
8. Compact subsoil for structural fill to 95% of Modified Proctor Maximum Dry Density (ASTM D1557) beneath all pavement areas and utility corridor trenches.
9. Compact subsoil for common site fill and embankment fill to 90% of the Modified Proctor Maximum Dry Density (ASTM D1557) beneath all lawn, landscape and detention pond areas.
10. Compact subsoil under building pad area to achieve soil-bearing capacities of 3,000 psf at a distance of 4-feet below the proposed finish floor elevations of all building ads.
11. If tests indicated work does not meet specified requirements, all sub-standard work shall be immediately removed, replaced and retested at no expense to the Owner.

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FRANCISCAN ALLIANCE
FRANCISCAN HEALTHCARE-MUNSTER
701 SUPERIOR AVENUE
MUNSTER, IN 46321

DVG # 15-D-1058

REVISIONS AND NOTES:	DATE:

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CANCER TREATMENT CENTER/M.O.B
PARKING LOT EXPANSION

CONSTRUCTION DETAILS

SCALE: NTS
DESIGN BY: DVG
DRAWN BY: DVG
DATE: 11-20-2015

C201

NOT FOR CONSTRUCTION

SANITARY SEWER GENERAL NOTES

1. All Floor Drains shall discharge to the sanitary sewer.

2. Sanitary sewer pipe shall be PVC (SDR 26) ASTM D-3034 with push-on rubber gasket joints and shall be in accordance with ASTM C-3212, unless otherwise noted on the plans for portions to be PVC (SDR 21).

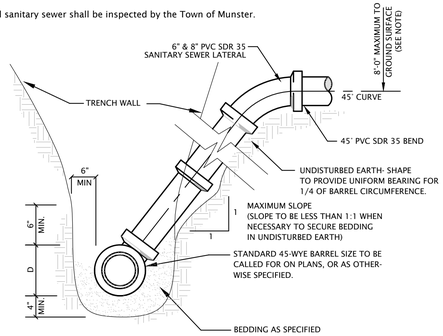
3. All sanitary sewer manholes shall be air tested for leaks in accordance with ASTM C1244-93 and Standard Test Method for Concrete Sewer Manholes by Negative Air Pressure (Vacuum) Test.

4. Where ductile iron pipe is used for sanitary sewer, the pipe shall be in accordance with ANSI A-21.51 and the joints in accordance with ANSI A-21.11.

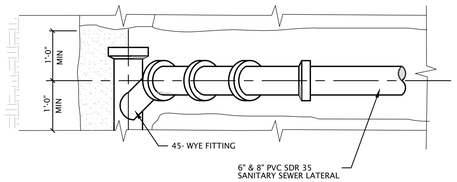
5. A deflection test shall be performed on each flexible pipe following the elapse of thirty (30) days after the placement of the final backfill. No pipe shall exceed a deflection of five percent (5%) or greater. The diameter of the rigid ball or mandrel used for a deflection test shall be no less than ninety-five percent (95%) of the base inside diameter of the pipe to be tested dependent on what is specified in the corresponding ASTM standard. The test shall not be performed with the aid of a mechanical pulling device.

6. A leakage test shall be performed using one of the following leakage test types.
   a.) A hydrostatic test shall be performed with a minimum of two (2) feet of positive head. The rate of exfiltration or infiltration shall not exceed two hundred (200) gallons per inch of pipe diameter per linear mile per day.
   b.) An air test shall conform to ASTM F1417-92, Standard Test Method for Installation Acceptance of Plastic Gravity Sewer Lines Using Low-Pressure Air, for plastic pipe.

7. All sanitary sewer shall be inspected by the Town of Munster.



SECTION



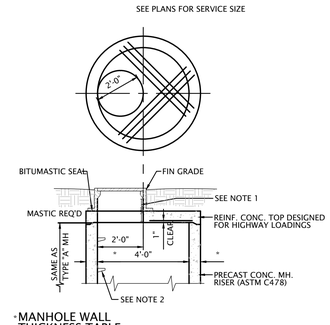
PLAN

NOTES:

1. RISERS TO BE CONSTRUCTED IN LIEU OF WYES WHERE SEWER DEPTH EXCEEDS 10'-0".

2. ALL SANITARY SEWER SERVICE LATERALS SHALL BE PLUGGED WITH A WATERTIGHT CAP AND SHALL BE LOCATED WITH 4"X4" WOOD MARKERS TO IDENTIFY THE LATERAL END.

SANITARY SEWER SERVICE



*MANHOLE WALL THICKNESS TABLE

MH I.D.	WALL THICKNESS
48"	5"
60"	6"
72"	7"

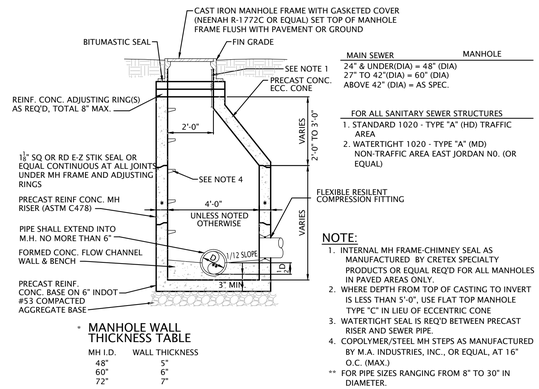
USED WHERE RESTRICTED HEAD ROOM WILL NOT ALLOW FOR TAPERED WALLS

NOTE:

1. INTERNAL MH FRAME-CHIMNEY SEAL AS MANUFACTURED BY CRETEX SPECIALTY PRODUCTS OR EQUAL REQ'D FOR ALL MANHOLES IN PAVED AREAS ONLY.

2. COPOLYMER/STEEL M.H. STEPS AS MANUFACTURED BY M.A. INDUSTRIES, INC., OR EQUAL, AT 16" O.C. (MAX.)

TYPE "C" (FLAT TOP) MANHOLE



MAIN SEWER	MANHOLE
24" & UNDER(DIA) = 48" (DIA)	
27" TO 42"(DIA) = 60" (DIA)	
ABOVE 42" (DIA) = AS SPEC.	

FOR ALL SANITARY SEWER STRUCTURES

1. STANDARD 1020 - TYPE "A" (HD) TRAFFIC AREA
2. WATERTIGHT 1020 - TYPE "A" (MD) NON-TRAFFIC AREA EAST JORDAN NO. (OR EQUAL)

NOTE:

1. INTERNAL MH FRAME-CHIMNEY SEAL AS MANUFACTURED BY CRETEX SPECIALTY PRODUCTS OR EQUAL REQ'D FOR ALL MANHOLES IN PAVED AREAS ONLY.
2. WHERE DEPTH FROM TOP OF CASTING TO INVERT IS LESS THAN 5'-0", USE FLAT TOP MANHOLE TYPE "C" IN LIEU OF ECCENTRIC CONE
3. WATERTIGHT SEAL IS REQ'D BETWEEN PRECAST RISER AND SEWER PIPE.
4. COPOLYMER/STEEL MH STEPS AS MANUFACTURED BY M.A. INDUSTRIES, INC., OR EQUAL, AT 16" O.C. (MAX.)

** FOR PIPE SIZES RANGING FROM 8" TO 30" IN DIAMETER.

*MANHOLE WALL THICKNESS TABLE

MH I.D.	WALL THICKNESS
48"	5"
60"	6"
72"	7"

TYPE "A" MANHOLE

WATER MAIN GENERAL NOTES

1. All water mains, fittings, and valves shall be ductile iron cement lined pressure class 350 with rubber gasket push-on joints in accordance with ANSI A-21.51 & AWWA C 151. Water main joints shall conform to the requirements of AWWA C 111. Mechanical joints shall be restrained and shall use Meg-A-Lug as manufactured by EBAA Iron Sales (or equal).

2. Water mains shall be laid at least 10' horizontally from any existing or proposed sanitary sewer, storm sewer, sewer manhole, drain or service connection as measured from outside edge of the water main to outside edge of the sewers or manhole. If local conditions prevent horizontal separation of 10 feet, then the SEWER SHALL BE CONSTRUCTED OF WATER MAIN QUALITY REQUIREMENTS as specified in the IAC 8-3.2 Sections 8, 9 and 17(a).

3. When water mains cross any existing or proposed sanitary or storm sewers (sewers), there shall be at least 18 inches vertical separation between the outside edge of the water main and the outside edge of the sewer. This shall be the case where water mains cross above or below sewers. This crossing must be at a minimum angle of forty-five (45) degrees measured from the centerline of each. All these conditions specified shall be maintained for a minimum distance of ten (10) feet from either side of the water main. If vertical separation specified herein cannot be met, then the SEWER SHALL BE CONSTRUCTED OF WATER MAIN QUALITY REQUIREMENTS as specified in the IAC 8-3.2 Sections 8, 9 and 17(a).

4. For additional separation requirements between water mains and sewers, the Contractor shall refer to the Indiana Administrative Code 327 IAC 8 and IAC 3.

5. All water main shall be installed in accordance with IAC 8-3.2-17. The contractor shall provide pressure and leak testing results conforming to IAC 8-3.2-17(a).

6. All water main shall be disinfected in accordance with IAC 8-3.2-18.

7. Water services shall have an outside shut-off valve located per the direction of the Municipal Utility Director. Separate services and shut-offs are required for domestic service and fire protection.

RESTRAINED PIPE LENGTH
(FEET)

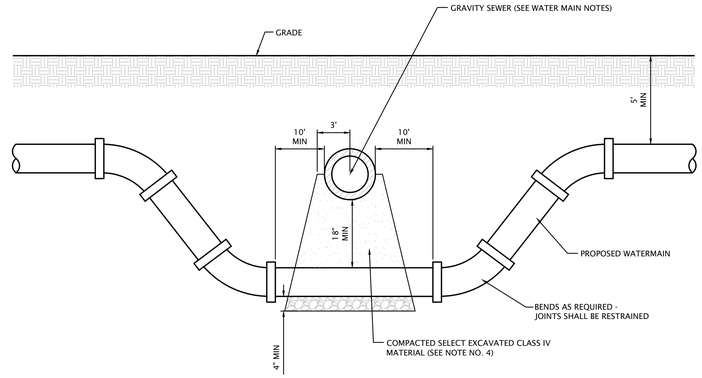
PIPE SIZE (INCHES)	TEE* BRANCH	90° ELBOW	45° ELBOW	22 1/2° ELBOW	11 1/4° ELBOW	DEAD ENDS
4	0	15	6	3	2	20
6	9	22	9	4	2	28
8	18	27	11	5	3	37
10	25	33	14	7	3	44
12	33	39	16	8	4	52
14	41	44	18	9	4	60
16	48	50	21	10	5	68
18	56	55	23	11	5	75
20	63	61	25	12	6	82
24	77	71	29	14	7	96
30	97	86	36	17	8	116
36	116	100	41	20	10	135

* ONE FULL LENGTH (18 FEET) OF PIPE ON BOTH SIDES OF BRANCH TO BE RESTRAINED.

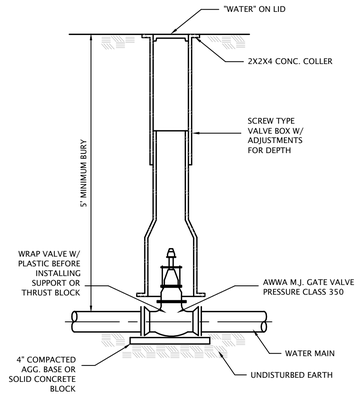
INCREASE ALL LENGTHS IN TABLE BY 75% FOR USE ON POLYETHYLENE WRAPPED DUCTILE IRON PIPE OR PVC PIPE.

TEST PRESSURE BASED ON 150 PSI.

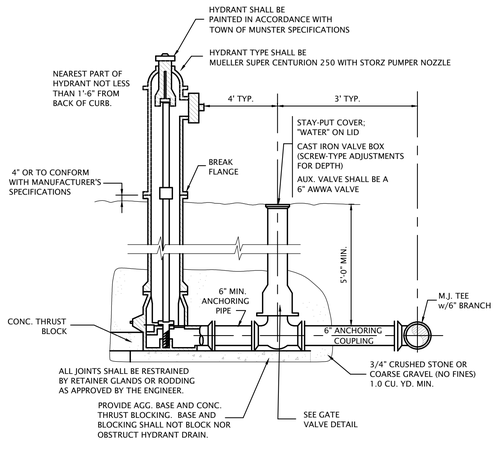
RESTRAINED PIPE LENGTH TABLE



WATER MAIN CROSSING



MAIN LINE WATER VALVE, 12" OR SMALLER



FIRE HYDRANT ASSEMBLY (TYPE "A")

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CANCER TREATMENT CENTER/M.O.B
PARKING LOT EXPANSION

CONSTRUCTION DETAILS

SCALE: NTS
DESIGN BY: DVG
DRAWN BY: DVG
DATE: 11-20-2015

C202

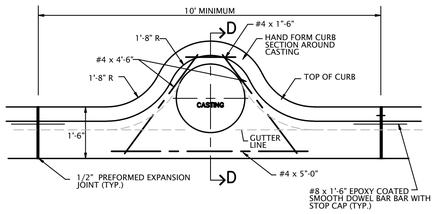
STORMWATER AND DRAINAGE GENERAL NOTES

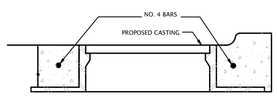
1. Drainage structures shall be in accordance with Munster Engineering Standards, "Drainage Structure Details" and "Frame and Grate, Flared End and Flat Slab Top Details".

2. Footing drains, sump pump drains and outside drains shall discharge to the storm sewer where storm sewer is provided.

3. The maximum allowable rate of infiltration or exfiltration shall not exceed 100 gallons, per 24 hours per inch-diameter per mile of sewer pipe.

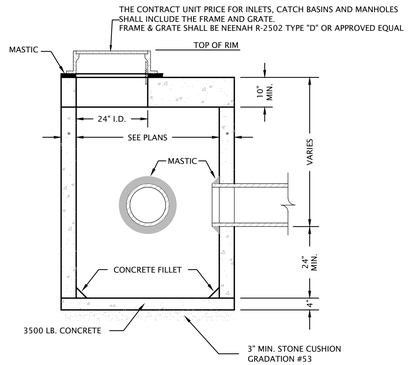
4. Storm sewer pipe 12" and larger shall be reinforced concrete minimum Class III, wall B conforming to ASTM C-76. The Contractor may use, as an alternative to reinforced concrete (Class III) storm sewer, corrugated high-density polyethylene pipe with smooth interior (ADS N-12) conforming to AASHTO M-294, if approved by the local Public Works and Engineering Departments.



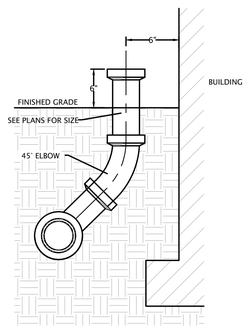


SECTION D-D

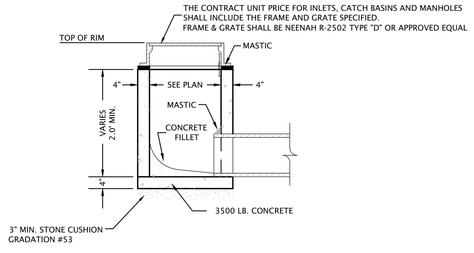
CURB AND GUTTER AT STRUCTURE



CATCH BASIN, TYPE A



DOWNSPOUT CONNECTION
TYPICAL SECTION



INLET, TYPE A

DVG Inc.
Project Management and Development Consulting
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(219) 662-7710 Fax (219) 662-2740

NOT FOR CONSTRUCTION

FRANCISCAN ALLIANCE
FRANCISCAN HEALTHCARE-MUNSTER
701 SUPERIOR AVENUE
MUNSTER, IN 46321

DVG # 15-D-1058

REVISIONS AND NOTES:	DATE:

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CANCER TREATMENT CENTER/M.O.B
PARKING LOT EXPANSION

CONSTRUCTION DETAILS

SCALE: NTS
DESIGN BY: DVG
DRAWN BY: DVG
DATE: 11-20-2015

C203

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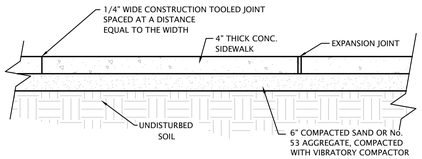
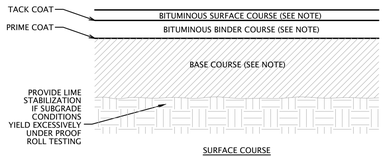
ASPHALT AND CONCRETE WORK DETAILS



SIDEWALK DETAIL

CONCRETE FLAT WORK NOTES

1. PROVIDE 3/4-INCH EXPANSION JOINT CONFORMING TO ASTM D 1751 ALONG BACK OF CURBS, DRIVEWAYS, STEPS, WALLS AND ACROSS THE SIDEWALK AT INTERVALS NOT TO EXCEED 40-FEET.
2. EXTEND EXPANSION JOINT MATERIAL FULL DEPTH OF THE SLAB.
3. PROVIDE TOOLED "V-GROOVE" CONTROL JOINT SPACED AT A DISTANCE EQUAL TO THE WIDTH OF THE WALK BUT NO OVER 8 FEET APART, OR AS SPECIFIED ON THE ARCHITECTURAL SITE PLAN.
4. CONCRETE SHALL BE CLASS A MEETING THE REQUIREMENTS OF THE MOST RECENT INDOT STANDARD SPECIFICATIONS MANUAL.
5. ALL CONCRETE FLAT WORK SHALL BE REINFORCED WIRE MESH 6"X6"X10/10, OR BE FIBER MESH REINFORCED CONCRETE.



SURFACE COURSE

SURFACE COURSE SHALL BE 1 ½ "
INDOT HMA, Surface, 9.5mm, Type A

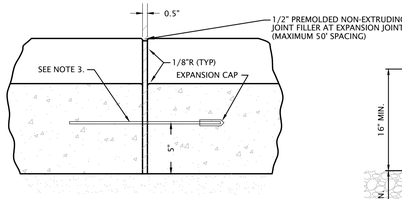
BASE COURSE

SURFACE COURSE SHALL BE 3"
INDOT HMA, Base, 25.0mm, Type A

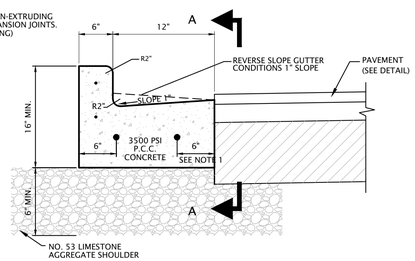
SUBBASE COURSE

BASE COURSE SHALL BE 10" OF NO. 53 AGGREGATE OVER GEOGRID BX1100 OR EQUAL OVER APPROVED PROOF-ROLLED SUBGRADE

PAVEMENT CROSS SECTION



SECTION "A-A"



NOTE:

1. PROVIDE 2-#4 BARS (10' LONG) CENTERED IN EACH UTILITY TRENCH.
2. COST OF BARS SHALL BE INCLUDED IN THE UNIT PRICE (PER LINEAL FOOT) FOR CURB AND GUTTER.
3. PROVIDE 2-#6 SMOOTH BARS W/EXPANSION CAPS AT EACH EXPANSION JOINT.
4. CONTRACTION JOINTS - CONTRACTION JOINTS SHALL BE PLACED AT EQUAL SPACES BETWEEN NORMAL EXPANSION JOINTS. CONTRACTION JOINTS SHALL SAW CUT IN THE UPPER 1/3 OF CURB AND GUTTERS WITHIN 7 DAYS OF PLACEMENT.
5. 1/4" EXPANSION JOINTS AT MAXIMUM 100 FEET.
6. CONTRACTION JOINTS AT MAXIMUM 20 FEET.

TYPE 1 CONCRETE CURB & GUTTER

A.D.A. NOTES AND DETAILS

A CURB RAMP(S) MUST BE PROVIDED ALONG AN ACCESSILBLE PATH FROM THE PARKING LOT TO OWNERS CURBED SIDEWALK.

A CURB RAMP(S) MUST ALSO BE PROVIDED IN THE PARKING LOT AT ALL INTERMEDIATE AND PERIMETER CURBS ALONG THE ACCESSIBLE ROUTE CONNECTING TO PUBLIC SIDEWALKS.

A RAMP IS ANY SLOPE GREATER THAN 1:20 (5%) AND SHALL HAVE A MAXIMUM SLOPE OF 1:12 (8.33%). THE MAXIMUM SLOPE IS 1" OF RISE PER FOOT OF DISTANCE TRAVELED.

A RAMP SHALL HAVE A DETECTABLE SURFACE IDENTIFYING THE AREA OF THE RAMP. THIS IS MOST COMMONLY DONE WITH PERPENDICULAR LINES SPACED 2" ON CENTER SCORED INTO THE SURFACE OF THE CONCRETE RAMP, A MINIMUM OF .3" DEEP.

CURB RAMPS OR SIDEWALK RAMPS LEADING DOWN INTO A PATH OF VEHICLE TRAFFIC MUST HAVE A DETECTABLE WARNING FEATURE EXTENDING THE FULL WIDTH AND DEPTH OF THE RAMP (MID-WALK "IN-LINE" RAMPS ONLY NEED DETECTABLE WARNINGS AT WALK/PARKING TRANSITION). THE DETECTABLE SURFACE MUST CONSIST OF RAISED TRUNCATED DOMES WITH A DIAMETER OF NOMINAL 0.9 INCHES, A HEIGHT OF NOMINAL 0.2 INCHES AND A CENTER-TO CENTER SPACING OF NOMINAL 2.35 INCHES. THE TEXTURE OF THE DETECTABLE WARNING FEATURE MUST CONTRAST WITH THE SURROUNDING SURFACES (EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT).

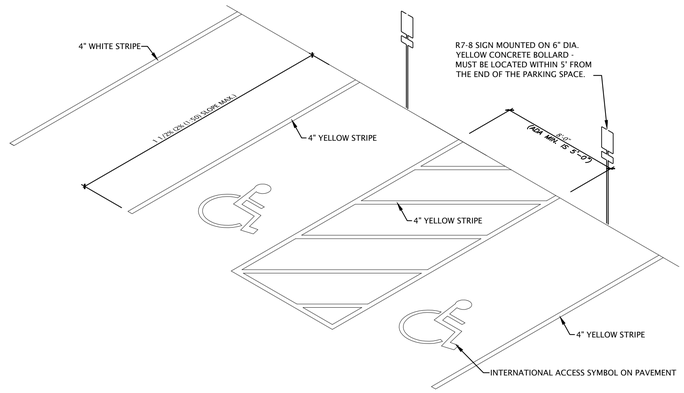
ADA DETECTABLE WARNING STRIPS SHALL BE A CAST IN PLACE DETECTABLE/TACTILE WARNING TILE. THE TILE MUST MEET ALL ADA REQUIREMENTS, AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANAFACTURERS INSTRUCTIONS. A 5-YEAR WARANTEE SHALL BE PROVIDED BY THE MANUFACTURER FOR THE INSTALLED TILE FOR COLORFASTNESS AND DURABILITY. DETECTABLE/TACTILE WARNING TILE SHALL BE ARMOR-TILE, ACCESS-TILE OR AN APPROVED VENDOR.

ADA DETECTABLE WARNING TILE SHALL BE ORIENTATED PERPENDICULAR TO THE PEDESTRIAN TRAVEL DIRECTION. SKEWED PLACEMENT TO MATCH A RADIUS IS NOT ALLOWED.

THE LEADING EDGE OF THE DETECTABLE WARNING TILE MUST BE CLOSER THAN 5' FROM THE VEHICLE SURFACE, AND HAVE A MINIMUM OF 24" LENGTH ALONG THE PEDESTRIAN TRAVEL DIRECTION. THE TILE MAY BE CUT TO MATCH A RADIUS AT THE CURB IF ONE END OF THE RAMP EXCEEDS THE 5' MINIMUM.

THE CLEAR WIDTH OF ANY RAMP MEASURED PERPENDICULAR TO THE PEDESTRIAN TRAVEL DIRECTION IS A MINIMUM OF 36".

THERE ARE LOCAL JURISDICTIONS THAT SPECIFICALLY REQUIRE DETECTIBLE WARNINGS ON THE SIDE FLARES OR TOP OF RAMP (CA.). THERE ARE LOCAL JURISDICTIONS THAT HAVE REDEFINED DETECTIBLE WARNINGS (e.g. EXPOSED CONTRASTING COLOR AGGREGATE, GROOVES IN A PARALLEL OR DIAMOND PATTERN ETC.). ACCESSIBILITY GUIDLINES DEFINED BY LOCAL ORDINANCE SHOULD SUPERSEDE WHEN MORE STRINGENT THAN ADAAG. IN THE ABSENCE OF A DEFINITION, FOLLOW ADAAG.



TYPICAL ADA PARKING SPACE PLAN

ACCESSIBLE PARKING ACCESS AISLES SHALL BE PART OF AN ACCESSIBLE ROUTE TO THE BUILDING ENTRANCE.

THE ACCESS AISLE SHALL BE DESIGNATED WITH HIGH QUALITY YELLOW DIAGONAL SURFACE PAINT STRIPING.

RAMPS MUST NOT EXTEND OUT FROM THE CURB INTO THE ACCESS AISLE OF ANY ACCESS PARKING SPACE.

ADA ALLOWS TWO PARKING SPACES TO SHARE AN ACCESS AISLE.

ACCESSIBLE SPACE REQUIREMENTS

TOTAL OFF STREET PARKING SPACES PROVIDED	NUMBER OF ACCESSIBLE PARKING SPACES REQUIRED
1 TO 25	1
26 TO 50	2
51 TO 75	3
76 TO 100	4
101 TO 150	5
151 TO 200	6
201 TO 300	7
301 TO 400	8
401 TO 500	9
501 TO 1000	2% OF TOTAL
OVER 1000	2% PLUS 1 FOR EACH 100 OVER 1000

THE ADA REQUIRES ONE VAN ACCESSIBLE PARKING SPACE WITH 96" ACCESS AISLE FOR ONE IN EVERY EIGHT ACCESSIBLE SPACES, BUT NOT LESS THAN ONE.

STRIPING NOTES:

1. PAINTED CROSSWALKS SHALL BE WHITE 18" WIDE STRIPES 6' LONG, SPACED 36" ON CENTER ACROSS THE ENTIRE LENGTH OF THE CROSSING.
2. PAINT 2" BLACK OUTLINE AROUND ARROWS AND LETTERS IN AREAS OF CONCRETE SURFACE.
3. PARKING SPACES ARE TO BE "WHITE" - 4" WIDE STRIPES
4. ADA SPACES, ADA MARKING, AND ADA ACCESS SPACE ARE TO BE "YELLOW" - 4" WIDE STROKES.

PARKING STALL NOTES:
EACH ACCESSIBLE PARKING SPACE IS TO BE A MINIMUM OF 8 FEET WIDE AND HAVE A 96" MINIMUM ACCESS AISLE FOR VANS OR 60" ACCESS AISLE FOR CARS ADJACENT TO THE SPACE. THE ACCESS AISLE MAY BE ON EITHER THE DRIVER'S SIDE OR THE PASSENGER'S SIDE OF THE ACCESSIBLE SPACE. THIS APPLIES TO 45, 60, AND 90 PARKING.

ACCESSIBLE PARKING SPACES ARE TO BE LOCATED AS CLOSE TO THE BUILDING ENTRANCE AS POSSIBLE AND SHALL BE IDENTIFIED WITH A SIGN.

ACCESSIBLE PARKING SPACES AND ACCESS AISLES SHALL BE LEVEL WITH A SLOPE BETWEEN 1.5% AND 2% OR 1:50 IN ALL DIRECTIONS. THIS INCLUDES BOTH "RUNNING SLOPES" AND "CROSS SLOPES."

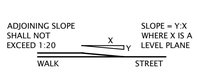
EACH PARKING SPACE ACCESS AISLE MUST CONNECT TO A COMMON LEVEL WITH AN ACCESSIBLE ROUTE...I.E., EACH ACCESS AISLE NEXT TO A PARKING SPACE MUST HAVE A CURB RAMP AT SIDEWALK OR BLEND TO A LEVEL WALKWAY LEADING TO THE ENTRANCE.

ACCESSIBLE PARKING-SIZE AND MARKINGS

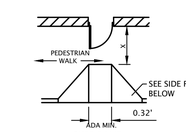
NOTE (R7-8 SIGN): THIS IS A STANDARD SIGN AND MAY BE ORDERED FROM ANY TRAFFIC SIGN SUPPLIER BY NUMBER. THE SIGN MUST BE SUPPLEMENTED WITH A "VAN ACCESSIBLE" SIGN AS APPLICABLE AND/OR AMOUNT OF THE FINE FOR ILLEGALLY PARKING IN THE RESERVED SPACE(S) A MUNICIPALITY MAY IMPOSE. CONFIRM WITH LOCAL REGULATIONS.

A U.S. DEPARTMENT OF TRANSPORTATION R7-8 (RESERVED PARKING) AND SUPPLEMENTAL SIGNS AS NOTED ABOVE MUST BE MOUNTED ON A PERMANENT POST NO LOWER THAN FOUR FEET FROM THE PAVEMENT. THE POST MUST BE MOUNTED IN THE CENTER OF THE 8 FOOT WIDE ACCESSIBLE PARKING SPACE, NO MORE THAN 5 FEET FROM THE FRONT OF THE PARKING SPACE. SEE ILLUSTRATION ABOVE.

ADA SIGNAGE



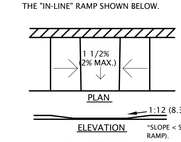
MEASUREMENT OF CURB RAMP SLOPE



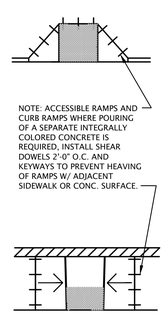
CURB RAMP

"X" IS 60" MIN. AT AN OUT SWING DOOR WITH A SLOPE OF 1:50 (2%) MAXIMUM. LEVEL SURFACE IS PREFERED.

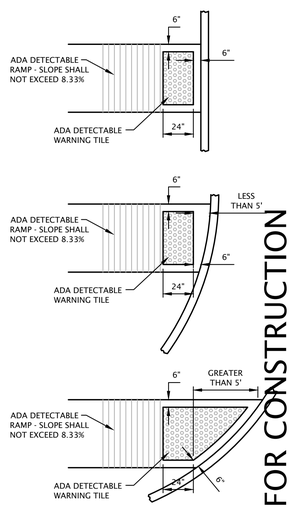
SIDE FLARE NOTE: (SEE REFERENCE DIAGRAM ABOVE). SIDE FLARES SHALL HAVE A MAXIMUM SLOPE OF 1:10 (10%). WHERE "X" IS LESS THAN 48", SIDE FLARE SLOPE SHALL BE 1:12 (8.33%) MAXIMUM. WHERE "X" IS LESS THAN 36", THE OWNER PREFERS THE "IN-LINE" RAMP SHOWN BELOW.



"IN-LINE" RAMP



NOTE: ACCESSIBLE RAMPS AND CURB RAMPS WHERE POURING OF A SEPARATE INTEGRALLY COLORED CONCRETE IS REQUIRED, INSTALL SHEAR DOWELS 2'-0" O.C. AND KEYWAYS TO PREVENT HEAVING OF RAMPS W/ ADJACENT SIDEWALK OR CONC. SURFACE.



ADA RAMPS

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NOT FOR CONSTRUCTION

BP PIPELINE AND WOLVERINE PIPELINE NOTES

WOLVERINE PIPE LINE COMPANY EXCAVATION / CONSTRUCTION RESTRICTIONS

The following restrictions and procedures apply to all work being performed within Wolverine Pipe Line Company (WPLCo) easement, unless exceptions are specifically agreed to in writing by a WPLCo Field Supervisor.

The excavator is responsible for all damages arising or resulting from excavator's activities within WPLCo's easement or in the vicinity of WPLCo's pipelines or other facilities.

1. Contact the appropriate One-Call system(s) (Michigan "MISS DIG", Indiana's "Indiana Underground Plant Protection Service" and Illinois "JULIE" or all are available by dialing "811") and WPLCo at least 48 hours before commencing work, or as required by regulations.

2. No excavation work may commence on WPLCo easement or property until a WPLCo representative has authorized it to begin. Notice of desired work start date should be given 48 hours in advance. A WPLCo representative will normally be on-site during excavation.

3. Construction of any roads, highways, or streets in the Easement Area or blasting within 500 feet of the pipelines will require an approved excavation/blasting plan.

4. No perpendicular digging will occur to initially expose the pipeline(s) unless there are no other options.

5. Mechanical excavation will cease once the earth has been removed to within two (2) feet of WPLCo's pipeline. Shovels will be used to manually clean the area above and below the line. After the line has been initially located, the line shall be kept visible to the equipment operator during the excavation process. Mechanical digging will not be allowed closer than one (1) foot from the side and bottom of the pipeline after the line has been exposed per the above procedure.

6. No excavations shall be made on land adjacent to the pipeline(s) which will in any way impair or withdraw the lateral support and cause any subsidence or damage to the pipeline(s). Sheet piling may be required.

7. All construction must be done in accordance with the applicable laws and regulations including OSHA requirements for excavation and trenching.

8. Excavator should mark the area of proposed excavation in white (paint, stakes, etc.)

9. New pipelines or utilities should cross under WPLCo's pipeline(s) with at least 24 inches of clearance. Any change in the surface grade or elevation over or along the pipeline(s) and right-of-way must be approved in advance.

10. At least 36-inches of compacted cover is required for all parking or driving areas within the easement. Concrete paving and curbing must be constructed in break-out sections.

11. Pipeline/utility crossings should be as close to 90 degrees to WPLCo's pipeline as possible, but in any event at an angle of 30˚ or more,(but not lengthways and atop) of the pipeline(s).

12. All non-steel underground crossings shall be encased across the width of WPLCo's easement.

13. Fiber-optic cable and long distance carrier underground crossings should be cased across the width of WPLCo's easement or a minimum of 60 feet.

14. All backfill on WPLCo's easement shall be mechanically compacted to the top of the pipeline(s) after removal of water and trash. Also see 10 above for parking or driving areas within the easement.

15. Temporary construction roads may be required to protect WPLCo's pipeline(s). WPLCo must approve above ground crossings on the easement for excavation or heavy equipment.

16. Permanent aboveground markers identifying an underground crossing pipeline or utility shall be installed and maintained at the limits of WPLCo's easement and/or the crossing.

17. If it is impractical to install and maintain aboveground markers due to the crossing location, plastic marker tape shall be installed below cultivation level and over WPLCo's pipeline(s), extending the width of the easement or a minimum of 60 feet.

18. Fence posts, where permitted by WPLCo, shall not be placed within 4 feet of the pipeline(s). Utility poles and guys shall not be placed within 8 feet of the pipeline(s).

19. No structures, trees or landscape plantings (with a mature height greater than 5-feet tall) are allowed within the easement.

20. If WPLCo deems it necessary, the excavator shall install a bar across the teeth of the bucket during excavation.

21. If WPLCo's pipeline(s) is exposed during the excavation, the hole will be made safe for entry and left open until WPLCo installs test leads and inspects WPLCo's exposed pipe.

22. Excavator shall abide by all state and federal safety laws, rules and regulations. Excavator shall operate equipment that is in good working condition, conducive to a safe working environment, while working on or near WPLCo's facilities.

BP PIPELINES (NORTH AMERICA) INC. GENERAL CONSTRUCTION REQUIREMENTS

General Safety Requirements

- **811 the national One-Call number, must be contacted at least 48 hours (2 working days)* before any construction and/or excavation activities are initiated within the pipeline right- of-way so that BP may have a representative present to ensure that there are no conflicts with the pipeline. (There is no cost to the third party contractor to use the One-Call Notification service. However, failure to utilize the One-Call service can be quite costly in terms of unnecessary risk for the contractor/excavator, their employees, innocent bystanders, personal property of others and the environment; as well as potential civil penalties and/or fines.)**
- **To have the pipeline physically located and depth verified, please contact BP's local field representative at**
- **It is the responsibility of the requestor to have the pipeline location and depth added to their plans and drawings and submitted to BP for evaluation.**

The requestor and/or its' contractor is responsible for taking all necessary safety precautions and will be held responsible for any damages caused to the pipeline or property as a result of their work.

Excavation Specific Requirements

- No excavation or construction activity will be permitted in the vicinity of a pipeline until all appropriate communications have been made with BP's field operations and the Right-of-Way Department. A formal engineering assessment may be required.
- There shall be no excavation or backfilling within the pipeline right-of-way for any reason without a representative of BP on site giving permission.
- In some instances, excavation and other construction activities around certain pipelines can be conducted safely only when the pipeline operating pressure has been reduced. Contractors are therefore cautioned that excavation which exposes or significantly reduces the cover over a pipeline may have to be delayed until the reduced operating pressures are achieved.

General Construction Activities

- The contractor shall not be permitted to transport construction materials or equipment longitudinally over the pipeline.
- Where it is necessary for construction equipment (*i.e.*, tractors, backhoes, dump trucks, etc.) or equipment transporting construction materials to cross the pipeline, the crossing of the pipeline right-of-way shall be at, or as near to, a 90˚ angle as is feasible.
- To gain access to the job site, the contractor shall submit a plan indicating where construction equipment will cross the pipeline, along with the depth of the pipe at the crossings, any proposed ramping over the pipeline, together with the following specifications for the equipment: type and weight of equipment; for track equipment - track width and length; for wheeled equipment - number of axles (single or tandem axles). BP will perform a stress factor calculation to determine if the equipment can safely cross the pipeline. If crossing of the pipeline is allowed, special measures may need to be taken to ensure the integrity of the pipeline.
- No track type construction equipment shall be permitted to pivot or turn directly over the top of the pipeline.
- A scraper or pan type tractor shall not be used for removal of soil within ten feet (10') of the centerline of the pipeline. Rubber tire or small track type equipment is an acceptable alternative.
- A sheepsfoot roller shall not be used for compaction purposes within five feet (5') or directly above the centerline of the pipeline.
- No vibratory rollers shall be used within three feet (3') of the centerline of the pipeline until the compacted cover over the pipeline has reached a depth of three and one-half feet (3 ½').

Parking Lots, Roads, Driveways, Fences and Structures

- No permanent structures may be constructed on the pipeline right-of-way (permanent structures shall include, but not be limited to, swimming pools, sheds, fences, earthen berms, bike paths, etc.).
- All permanent structures shall cross the pipeline right-of-way at, or as near to, a 90˚ angle as is feasible. In no instance shall the angle of the crossing be less than 45˚.
- There shall be a minimum vertical separation of two feet (2') between the pipeline and any underground structure.
- For proposed road crossings and driveways BP will perform a stress factor calculation to determine the amount of cover required over the pipeline. Under no circumstances shall cover be less than the following: a) five and one half feet (5.5') for all road crossings and commercial driveways, and b) three feet (3') for residential driveways.
- Proposals for parking lot construction on the pipe line right-of-way are discouraged.
- A minimum of four feet (4') of cover is required for all drainage ditches.
- No utility structures (such as, but not limited to, manholes or catch basins) shall be located over the pipeline. A minimum horizontal clearance of five feet (5') is required between the structure and the pipeline.

Landscape and Vegetation

- No trees are allowed on the pipeline right-of-way. BP may permit the installation of limited landscaping and minor shrubbery plantings with written communication and/or documentation. For a major development, landscaping plans must first be submitted in writing to BP for review and approval. Any plantings that restrict efficient aerial inspection or limit access to the easement area will be considered an interference and will not be allowed.

Foreign Line or Utility Crossings

- All foreign lines shall cross the pipeline right-of-way at, or as near to, a 90˚ angle as is feasible. In no instance shall the angle of the crossing be less than 45˚.
- In no instance shall the foreign line be placed parallel to the pipelines right-of-way.
- The foreign line shall cross under the pipeline with at least two feet (2') of vertical separation unless the pipeline is at a prohibitive depth. If the pipeline is at a prohibitive depth, BP personnel will review and evaluate the proposed crossing location to determine if it will be feasible to allow the foreign line to cross above the pipeline.
- If the foreign line is a telecommunications cable, power cable, or similar in nature, the foreign line shall be placed in a Schedule 40 PVC conduit, or greater, for a linear distance extending ten feet (10') on either side of the centerline of the pipeline. The entire length of carrier pipe shall either be encased in concrete, or shall have a concrete cap placed on top of it.
- If the foreign line is a metallic pipeline, or similar in nature, the foreign line shall be coated with a suitable coating for a distance of at least fifty feet (50') on either side of the centerline of the pipeline. The foreign line owner, operator, or their contractor, shall install cathodic protection bonds and potential test leads to the foreign line at the crossing location and terminate the leads at an above-ground location as identified by BP's on-site representative. BP will install the test leads on BP's pipeline.
- Below-ground precautionary flagging (warning tape) shall be placed in the ditch line above the foreign line. The warning tape shall be placed approximately one foot (1') below the final surface grade/elevation. The warning tape shall extend for a linear distance of ten feet (10') on either side of the centerline of the pipeline.

If, in the exercise of the pipeline easement rights, any "Permitted Facility" is damaged, disturbed or otherwise interfered with, BP and/or the pipeline easement owner shall be held harmless from and against any and all claims of whatsoever kind and nature which might be associated with or derived from such damage, disturbance or interference.

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Project Management and Development Consulting
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CANCER TREATMENT CENTER/M.O.B
PARKING LOT EXPANSION

CONSTRUCTION DETAILS

SCALE: NTS
DESIGN BY: DVG
DRAWN BY: CC
DATE: 11-20-2015

C205

NOT FOR CONSTRUCTION

GENERAL STORMWATER MANAGEMENT NOTES

- Soil erosion and sedimentation control shall protect against loss of soil by the action of water, ice and wind.
- Erosion control shall be in accordance with Town of Merrillville Storm Water Ordinance & Storm Water Technical Manual & "The Indiana Storm Water Quality Manual".
- There are two main elements for Storm Water Quality: Construction Site Stormwater Runoff Control and Post-Construction Stormwater Management. The contractor shall provide Construction Site Stormwater Runoff Control as required and construct the Post-Construction Stormwater Management features as shown on these plans.
- The contractor shall be responsible for maintaining site conditions such that Stormwater Runoff Control is provided throughout construction. Surface water runoff management, ie: temporary ditches, swales, bypass pumping, and erosion control measures shall be constructed and maintained as required by construction activity and these items are considered incidental to the contract. These items shall be included in the base contract.
- Upon the completion of the site work the contractor shall remove the Construction Site Stormwater Runoff Control measures and install the Post-Construction Stormwater Management measures.
- Those Stormwater Runoff Control measures such as detention ponds that will also serve in the Post-Construction Stormwater Management Plan shall have construction sediment removed and full functionality restored upon the completion of the Site construction.
- Each Construction Site Stormwater Runoff Control measure shall be installed immediately following the construction of the structure or feature in which the measure is intended to protect.
- The contractor is responsible for any damage and/or cleaning to the structure or feature. Corrective work incurred by the contractor shall be considered incidental to the contract.
- The contractor is responsible for compliance with the S.W.P.P.P. Any fines or punitive measures incurred by the project due to failure to comply with the S.W.P.P.P. are the responsibility of the contractor. These costs shall be considered incidental to the contract, and shall not be considered an extra.
- During the course of construction the S.W.P.P.P. may require additional erosion control measures to be installed to address site specific items not anticipated by this plan due to construction schedule or sequencing. It is not the intent of this plan to direct the schedule or sequencing beyond the general construction sequence. Any stormwater runoff control measures required due to construction methodology, sequencing, etc. are incidental to the contract. Corrective work and maintenance shall also be considered incidental, and shall not be considered an extra.
- All items shown on these detail sheets are standard details and describe standard installation practices. Not all of these Stormwater Runoff Control measures will be utilized. See the erosion control plan for location and types of erosion control measures utilized. The stormwater checklist document will serve to further outline the S.W.P.P.P. for this project and it is considered part of the plan documents. In the event that site conditions require additional or different erosion control measures, these details serve to describe some acceptable methods.

POST-CONTRUCTION STORMWATER MANAGEMENT PLAN

- After construction is completed, including buildings, parking lots constructed, and landscaping, the property owner will take possession of the property. When the property becomes occupied, it is no longer the responsibility of the developer to maintain the site. The responsibility for maintaining the permanent erosion and sediment control measures belongs to the current owner/s of the property. Pollutants associated with the proposed land use will most likely be very typical of commercial/retail developments. Most expected pollutants will be associated with automobiles: oil, grease, antifreeze, brake dust, rubber fragments, gasoline, diesel fuel, metals, and improper disposal of trash. It is the responsibility of the property owner/s or owners association to provide routine maintenance. Some maintenance items may include trimming vegetation, picking up litter, monitoring and cleaning catch basins, pond outlet structure and culverts. The sediment control basins protecting the stormwater quality of the site will require periodic cleaning of sediments that accumulate. After vegetation has been established, temporary erosion and sediment control measures such as silt fence and straw bales will be removed by the installing contractor.
- The plans make use of the detention ponds, riprap at the outfalls, and sediment traps (forebays) to control the pollutants that occur after construction activities conclude.
- The post-construction stormwater quality measures will be installed as a part of the normal construction activities for the site. They shall be fully operational, and complete at the completion of construction.
- All storm water run-off shall be controlled by the detention ponds constructed as part of these engineering plans. The stormwater quality measures associated with the ponds shall minimize the pollutants from stormwater run-off.
- All storm water run-off shall be controlled by the detention ponds constructed as part of these engineering plans. The stormwater quality measures associated with the ponds shall minimize the pollutants from stormwater run-off and therefore minimize adverse impacts to the receiving streams and riparian habitats.
- Green spaces - The green space areas of the site should receive routine fertilizing, watering, mowing and trimming to maintain a healthy landscape.
- Wet ponds - Wet detention ponds should be inspected routinely. Cleaning and removal of debris should occur after major storm events (>2" rainfall). Harvesting of vegetation within the pond should occur when there is a 50% reduction in the original open water surface area. Repair of the embankments and side slopes should be done annually. Any repair to the control structure should be done annually or as needed. Accumulated sediment shall be removed by the owner once 50% of the original volume is lost, which is generally every 20 years.
- Dry ponds - Dry detention ponds should be mowed at least 2 times per month to maintain turf grass cover. Cleaning and removal of debris should occur after major storm events (>2" rainfall). Harvesting of vegetation within the pond should occur when there is a 50% reduction in the original open water surface area. Repair of the embankments and side slopes should be done annually. Any repair to the control structure should be done annually or as needed. Inlets and outlets should be cleared of sediment and debris to prevent clogging.
- Catch basins - Catch basins should be routinely inspected for build up of sediment. Mechanical cleaners or hand cleaning will be required to maintain the function of the catch basin.
- Storm drain flushing - In the event that the storm drains cease to function properly due to excessive sediment buildup, flushing of the storm drains may be required.

CONSTRUCTION SITE STORMWATER RUN-OFF CONTROL

SUMMARY OF BASIC PRINCIPLES

1. Keep disturbed area as small as possible.

2. Stabilize and/or protect disturbed areas as soon as possible.

3. Keep storm water runoff velocities low.

4. Retain sediment within immediate construction area.

The purpose of this plan is to specify methods for construction site stormwater runoff control.

All soil erosion and sedimentation control devices shall be regularly maintained by the contractor through the duration of the project. Collected silt and sedimentation shall be removed as required to maintain the effectiveness of the silt traps or sedimentation control devices. The contractor shall replace filter materials which have become ineffective due to contamination or physical deterioration. The contractor shall inspect all stormwater runoff control devices weekly and after all storm events.

The contractor shall have a log of maintenance and inspections, to be available at the site upon request of Local and State Inspectors.

If possible no grubbing should take place within 30' of an active watercourse.

GENERAL CONSTRUCTION SEQUENCE

- Placement of silt barrier fence and temporary construction entrance
- Any site clearing and demolition activities required by the existing conditions
- Topsoil removal and stockpiling
- Installation of the Stormwater Runoff Control Outfall measure, such as the detention pond.
- Mass grading of the subgrade
- Installation of underground water, sewer, & storm sewers
- Installation of Gas, Electric, and Cable
- Installation of concrete washout
- Installation of roadways
- Backfilling of roadways and final grading

STORMWATER QUALITY CONSTRUCTION SEQUENCE

The sequence of when each measure will be implemented is summarized below.

- Silt fence must be installed prior to any construction.
- Initiate weekly Self-montoring program.
- Post the Rule 5 NOI with the IDEM permit number and the Local Plan Approval Letter (NOS) at the entrance to the construction site.
- The construction entrance is to be constructed prior to construction. This can be placement of the stone drive, or the use of "mud mats".
- Inlet protection as detailed on these plans is to be installed surrounding each inlet/drywell/catch basin until work is completed and protection has been approved for removal.
- Scour protection such as Silt Dikes, Check Dams are to be installed across each swale until work is completed.
- Pond banks are to be permanently seeded and blanketed as soon as possible.
- Temporary seeding shall be placed 14 days after grading is complete or if disturbed ground is intended to be left for a period of more than 14 days.
- Stormwater outlet protection is to be constructed with completion of the storm sewer.
- Disturbed areas will be permanently seeded and mulched upon completion of project.
- Erosion control features shall be maintained until construction is complete.
- Any temporary erosion control measures are to be removed once permanent vegetative cover has been established.
- Rule 5 Notice of Termination shall be submitted.

See attached details for acceptable erosion and sedimentation control installation methods.

PREDEVELOPMENT EXISTING CONDITIONS

For a narrative describing the predevelopment existing conditions see the Storm Water Technical Report

POTENTIAL CONSTRUCTION POLLUTANT SOURCES

Potential pollutants that could enter the stormwater during construction include exposed soils, fuel and oil from leaking heavy equipment and vehicles. Equipment has the potential to leak fuel throughout the disturbed areas, or wherever construction is occurring. The contractors will inspect equipment before initiating construction and routinely thereafter. If leaks are discovered, they will be repaired before the equipment is used or new equipment will be brought to the site.

Bulk Fuel storage on-site can leak and thereby be a pollutant. All Fuel storage tanks shall meet the minimum requirements of the Fuel Storage requirements.

Exposed soils also have potential for being eroded by water and wind and must be prevented from entering the stormwater system. The contractor will install silt fence, riprap, and ditch checks in areas designated on the site development plans.

TYPES OF CONTROL DEVICES

The Construction Site Stormwater Runoff Control Plan involves the use of four types of control devices to manage runoff thereby assuring that runoff meets the current requirements for stormwater quality.

1. Erosion Control
   - a. Chemical Stabilization
   - b. Geotextiles
   - c. Scour Stop
   - d. Riprap
   - e. Mulching
   - f. Soil Roughening
   - g. Topsoil Utilization
   - h. Seeding
   - i. Sodding
2. Runoff Control
   - a. Check Dams
   - b. Temporary Diversion Dikes
   - c. GeoRidge Ditch Berms
3. Sediment Control
   - a. Polymer Systems (Floc Logs)
   - b. Fiber Rolls
   - c. Sediment Basins
   - d. Dewatering Bags
   - e. Silt Fence
   - f. Storm Drain Inlet Protection
   - g. Construction Entrances
   - h. Construction Entrance Mud Mats
4. Material Management (housekeeping)
   - a. Concrete Washouts
   - b. Spill Prevention and Control Plan
   - c. Fuel Storage
   - d. Stockpiles
   - e. Temporary Facilities
   - f. Material Handling and Storage

SELF MONITORING PROGRAM

The contractor shall perform inspections weekly and after each storm event of 0.5" or more throughout the construction process for all Construction Site Stormwater Runoff Control measures.

See the Maintenance Section under each measure, or follow the manufacturers recommendations for routine maintenance.

The attached self monitoring form shall be used to monitor the Construction Site Stormwater Runoff Control measures. A binder of the weekly forms shall be kept and available upon request.

The contractors will inspect equipment before initiating construction and routinely thereafter to assure that mechanical equipment is not polluting the stormwater runoff.

SELF MONITORING FORM

Date: _____
Project: _____
Inspected by: _____
Type of Inspection: ☐ Scheduled Weekly ☐ Rain Event

CONSTRUCTION SITE INSPECTION AND MAINTENANCE LOG
(To be Completed by Property Owner or Agent)

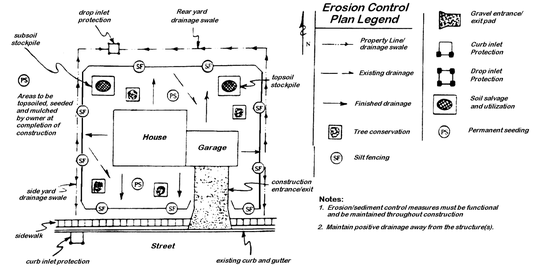
All stormwater pollution prevention BMPs shall be inspected and maintained as needed to ensure continued performance of their intended function during construction and shall continue until the entire site has been stabilized and a Notice of Termination has been issued. An inspection of the project site must be completed by the end of the next business day following each measurable storm event. If there are no measurable storm events within a given week, the site should be monitored at least once in that week. Maintenance and repair shall be conducted in accordance with the accepted site plans. This log shall be kept as a permanent record and must be made available to the Municipal Engineer, in an organized fashion, within forty-eight (48) hours upon request.

Yes	No	N/A	
			1. Are all sediment control barriers, inlet protection and silt fences in place and functioning properly?
			2. Are all erodible slopes protected from erosion through the implementation of acceptable soil stabilization practices?
			3. Are all dewatering structures functioning properly?
			4. Are all discharge points free of any noticeable pollutant discharges?
			5. Are all discharge points free of any noticeable erosion or sediment transport?
			6. Are designated equipment washout areas properly sited, clearly marked, and being utilized?
			7. Are construction staging and parking areas restricted to areas designated as such on the plans?
			8. Are temporary soil stockpiles in approved areas and properly protected?
			9. Are construction entrances properly installed and being used and maintained?
			10. Are "Do Not Disturb" areas designated on plan sheets clearly marked on-site and avoided?
			11. Are public roads at intersections with site access roads being kept clear of sediment, debris, and mud?
			12. Is spill response equipment on-site, logically located, and easily accessed in an emergency?
			13. Are emergency response procedures and contact information clearly posted?
			14. Is solid waste properly contained?
			15. Is a stable access provided to the solid waste storage and pick-up area?
			16. Are hazardous materials, waste or otherwise, being properly handled and stored?
			17. Have previously recommended corrective actions been implemented?

If you answered "no" to any of the above questions, describe any corrective action which must be taken to remedy the problem and when the corrective actions are to be completed.

SAMPLE EROSION/SEDIMENT CONTROL PRACTICE PLAN

FOR A TYPICAL ONE OR TWO FAMILY DWELLING UNDER CONSTRUCTION



DVG Inc. has prepared this erosion and sedimentation control plan for the owner/developer in accordance with the known requirements and ordinances. It is the responsibility of the owner/developer for compliance with this erosion and sedimentation control plan and the related attachments by all subcontractors and consultants that perform work on the project site. The owner/developer is responsible for the routine inspection and maintenance of the erosion and sediment control measures. DVG Inc. is not responsible for the enforcement or compliance of the Erosion and Sediment Control Plan. Any additional erosion or sediment control measures beyond those specified in this plan, for unforeseen or unexpected situations, which may be required by the regulatory agencies shall be the responsibility of the owner/developer to implement.

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701 SUPERIOR AVENUE
MUNSTER, IN 46321

DVG # 15-D-1058

REVISIONS AND NOTES:	DATE:

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CANCER TREATMENT CENTER/M.O.B
PARKING LOT EXPANSION

S.W.P.P.P. DETAILS

SCALE: NTS
DESIGN BY: DVG
DRAWN BY: DVG
DATE: 11-20-2015

C301

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EROSION CONTROL MEASURES

CHEMICAL STABILIZATION

MATERIAL: Soft pliable matting such as jute, coir or burlap, Applied Polymer Systems, "Silt Stop" dry powder (or Approved Equal)

COVERAGE: "Silt Stop" dry powder is a soil specific material, a soil sample must be submitted to the manufacturer to determine proper application rates.

INSTALLATION:

1. Prepare the site by filling in gullies, rills, low spots.
2. Apply Silt Stop powder dry over dry ground with a seed/fertilizer spreader
3. Select the type and weight of erosion control blanket to fit the site conditions (e.g., slope, channel, flow velocity).

MAINTENANCE:

1. During vegetative establishment, inspect after storm events for any erosion.
2. If any area shows erosion, repair the grade and reapply Silt Stop powder and re-lay and staple the blanket.
3. After vegetative establishment, check the treated area periodically.

GEOTEXTILES

MATERIAL: North American Green - S 150 or DS 150 Blanket
S 150 when placement occurs in the fall, and winter durability is required
DS 150 degrades more rapidly allowing for sooner mowing of the stabilized area.

EROSION CONTROL BLANKET (SURFACE-APPLIED)

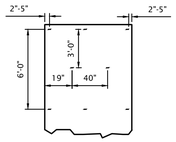
ANCHORING: Staples as recommended by the manufacturer. For North American Green use Staple pattern "B" - see chart below.

INSTALLATION:

1. Select the type and weight of erosion control blanket to fit the site conditions (e.g., slope, channel, flow velocity).
2. Install any practices needed to control erosion and runoff, such as temporary or permanent diversion, sediment basin or trap, silt fence, and straw bale dam.
3. Grade the site as specified in the construction plan.
4. Add topsoil where appropriate.
5. Prepare the seedbed, fertilize (and lime, if needed), and seed the area immediately after grading.
6. Follow manufacturer's directions, lay the blankets on the seeded area such that they are in continuous contact with the soil and that the upslope or upstream ones overlap the lower ones by at least 8 in.
7. Tuck the uppermost edge of the upper blankets into a check slot (slit trench), backfill with soil, and tamp down.
8. Anchor the blankets as specified by the manufacturer.

MAINTENANCE:

1. During vegetative establishment, inspect after storm events for any erosion below the blanket.
2. If any area shows erosion, pull back that portion of the blanket covering it, add soil, re-seed the area, and re-lay and staple the blanket.
3. After vegetative establishment, check the treated area periodically.



1.15 staples per square yard
STAPLE PATTERN "B"
North American Green

RIP-RAP - Scour Protection

MATERIAL: Hard, angular, and weather-resistant, having a specific gravity of at least 2.5

GRADATION: Well-graded stone, 50% (by weight larger than the specified d_{50}; however, the largest pieces should not exceed two times the specified d_{50}, and no more than 15% of the pieces (by weight) should be less than 3 in.

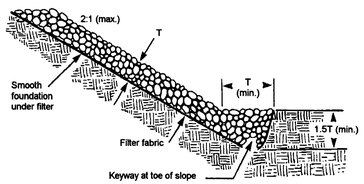
FILTER: Use geotextile fabric for stabilization and filtration or sand/gravel layer placed under all permanent riprap installations.

SLOPE: 2:1 or flatter, unless approved in the erosion and sediment control plan.

MINIMUM THICKNESS: Two times the specified d_{50} stone diameter.

SUBGRADE PREPARATION:

1. Remove brush, trees, stumps, and other debris.
2. Excavate only deep enough for both filter and riprap. Over-excavation increases the amount of spoil considerably.
3. Compact any fill material to the density of the surrounding undisturbed soil.



4. Cut keyway in stable material at the base of the slope to reinforce the toe. Keyway depth should be 1 1/2 times the design thickness of the riprap and should extend a horizontal distance equal to the design thickness.
5. Smooth the graded foundation.

FILTER PLACEMENT:

1. If using geotextile fabric, place it on the smoothed foundation, overlap the edges at least 12 in., and secure with anchor pins spaced every 3 ft. along the overlap.
2. If using a sand/gravel filter, spread the well-graded aggregate in a uniform layer to the required thickness (6 in. min.); if two or more layers are specified, place the layer of smaller gradation first, and avoid mixing the layers.

RIPRAP PLACEMENT:

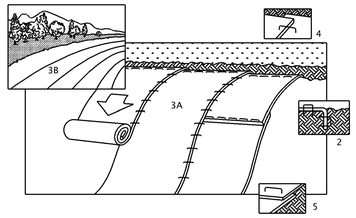
1. Immediately after installing the filter, add the riprap to full thickness in one operation. (Do not dump through chutes or use any method that causes segregation of rock sizes or that will dislodge or damage the underlying filter material.)
2. If fabric is damaged, remove the riprap and repair by adding another layer of fabric, overlapping the damaged area by 12 in.
3. Place smaller rock in voids to form a dense, uniform, well-graded mass. (Selective loading at the quarry and some hand placement may be needed to ensure an even distribution of rock material.)
4. Blend the rock surface smoothly with the surrounding area to eliminate protrusions or over-falls.

MAINTENANCE:

1. Inspect periodically for displaced rock material, slumping, and erosion at edges, especially down-stream or down-slope.

EROSION CONTROL BLANKET (SIDE SLOPE APPLICATION)

DETAIL SOURCE: NORTH AMERICAN GREEN



NOTE: Refer to general staple pattern guide for correct staple recommendations for channels.

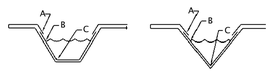
1. PREPARE SOIL BEFORE INSTALLING BLANKETS. INCLUDING APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
3. ROLL THE BLANKETS (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2" OVERLAP.
5. WHEN BLANKETS MUST BE SPLICED DOWN THE SLOPE, PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH APPROXIMATELY 4" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART.

EROSION CONTROL BLANKET (CHANNEL APPLICATION)

DETAIL SOURCE: NORTH AMERICAN GREEN

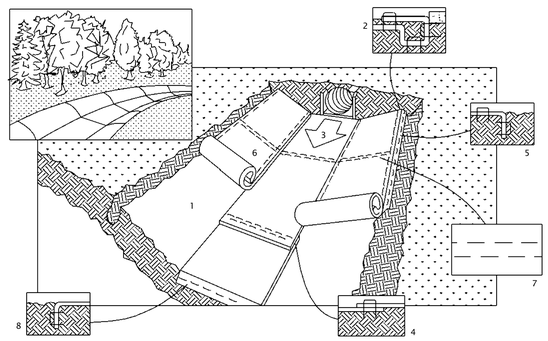
NOTE: Horizontal staple spacing should be altered if necessary to allow staples to secure the critical points along the channel surface.

Refer to general staple pattern guide for correct staple recommendations for channels.



CRITICAL POINTS

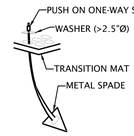
A. OVERLAPS AND SEAMS
B. PROJECTED WATER LINE
C. CHANNEL BOTTOM/SIDES SLOPE VERTICES



1. PREPARE SOIL BEFORE INSTALLING BLANKETS. INCLUDING APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH, BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
3. ROLL CENTER BLANKET IN DIRECTION OF WATER FLOW ON BOTTOM OF CHANNEL.
4. PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH A 6" OVERLAP. USE A DOUBLE ROW OF STAGGERED STAPLES 4" APART TO SECURE BLANKETS.
5. FULL LENGTH EDGE OF BLANKETS AT THE TOP OF SIDE SLOPES MUST BE ANCHORED IN 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. BLANKETS ON SIDE SLOPES MUST BE OVERLAPPED 4" OVER THE CENTER OF BLANKET AND STAPLED (2" FOR C350 MATTING).
7. IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT INTERVALS. USE A ROW OF STAPLES 4" APART OVER ENTIRE WIDTH OF THE CHANNEL. PLACE A SECOND ROW 4" BELOW THE FIRST ROW IN A STAGGERED PATTERN.
8. THE TERMINAL END OF THE BLANKETS MUST BE ANCHORED IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.

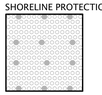
SCOURSTOP TRANSITION MAT - Scour Protection

MATERIAL: ScourSTOP semi-rigid, highdensity polyehtylene plastic mat.
Erosion Tech LLC
2501SE Tones Drive, Suite 500
Ankeny, Iowa 50021
877-99-SCOUR
www.scourstop.com



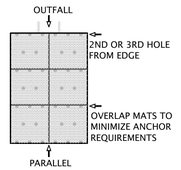
PIPE DIAMETER	DISCHARGE (CFS)	SCOURSTOP WIDTHxLENGTH
12"	8	4' x 4'
24"	30	4' x 8'
36"	75	8' x 12'
48"	100	12' x 16'
60"	150	12' x 20'
72"+		SEE DETAILS

SHORELINE PROTECTION:



ANCHOR CONFIGURATION FOR SLOPES STEEPER THAN 5:1; TRANSITION MATS OVER A MIN. 8 OZ. GEOTEXTILE

ADD EXTRA ANCHORS IF NECESSARY TO ENSURE CONSISTENT CONTACT WITH SOIL, OR IMPROVE SOIL SURFACE SMOOTHNESS.



POSITION ANCHORS TO SECURE SCOURSTOP MATS FLUSH WITH SOIL SURFACE. MINIMIZE GAPS OR BRIDGING.

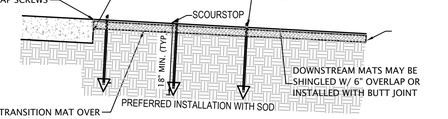
ANCHOR REQUIREMENTS*:
FIRST ROW OF SCOURSTOP MATS
- MINIMUM OF 8 ANCHORS
SECOND ROW OF SCOURSTOP MATS
- MINIMUM OF 5 ANCHORS

*TO ACHIEVE CONSISTENT CONTACT WITH THE SOIL, EXCEED THE MINIMUM ANCHOR REQUIREMENT AT INSTALLATION

EDGE OF HARD SURFACE ADJACENT SOILS SHOULD BE GRADED SO SURFACE OF MAT EVEN WITH TOP OF SURFACE AFTER INSTALLATION

BUTT JOINT OR OVERLAP USING HEAVY TAP SCREWS

ATTACH MAT TO FIRM SOIL WITH ANCHOR USING FLEXIBLE STRAP AND PUSH ON ONE-WAY STOP (INSTALL UP TO 36" DEEP, IF NEEDED TO REACH FIRM SOIL)



INSTALL TRANSITION MAT OVER TRM OR SOD. GRADE SHOULD BE SMOOTH AND UNIFORM. GRADE OUT ANY RILLS FOR CONSISTENT SOIL STRUCTURE PRIOR TO INSTALLATION

NOT TO SCALE

NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
2. DO NOT SCALE DRAWINGS.

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NOT FOR CONSTRUCTION

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MUNSTER, IN 46321

DVG # 15-D-1058

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CANCER TREATMENT CENTER/M.O.B
PARKING LOT EXPANSION

S.W.P.P.P. DETAILS

SCALE: NTS
DESIGN BY: DVG
DRAWN BY: DVG
DATE: 11-20-2015

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NOT FOR CONSTRUCTION

EROSION CONTROL MEASURES (continued)

MULCHING

MATERIAL: Straw, hay, wood fiber, cellulose, or excelsior, or erosion control blankets or turf reinforcement mats, as specified in the erosion and sediment control plan.

COVERAGE: At least 75% of the soil surface.

ANCHORING: Required for straw or hay mulch, and sometimes excelsior to prevent displacement by wind and/or water.

MATERIAL	RATE	COMMENTS
Straw or hay	1 1/2 to 2 tons/acre	Should be dry, unchopped, free of undesirable seeds. Spread by hand or anchored Must be crimped or anchored
Wood fiber or cellulose	1 ton/acre	Apply with a hydromulcher and use with tacking agent.
Long fiber wood (excelsior)	1/2 to 3/4 ton/acre	Anchor in areas subject to wind.

INSTALLATION:

1. Apply mulch at the recommended rate.
2. Spread uniformly by hand, hay fork, mulch blower, or hydromulcher. After spreading, no more than 25% of the ground surface should be visible.
3. If straw or hay is used, anchor it immediately in one of the following ways.

ACNHORING METHOD	HOW TO APPLY
Mulch anchoring tool, or Farm disk (dull, serrated and set straight)	Crimp or punch the straw or hay into the soil 2-4 in. operate machinery on the contour of the slope.
Cleating with dozer tracks	Operate dozer up and down slope, not across or else the tracks will form rills.
Wood hydromulch fibers	Apply 1-2 tons/acre using a hydromulcher at a rate of 750 lbs/acre with a tacking agent (or according to contractor specifications). Do not use in areas of concentrated flow.
Asphalt emulsion	Emulsified asphalt should conform to the requirements of ASTM Spec. #977. Apply with suitable equipment at a rate of 0.05 gal/sy. Do not use in areas of concentrated flow.
Synthetic tackifier, binder or soil stabilizer	Apply according to manufacturer's recommendations.
Biodegradable netting (polypropylene or similar material)*	Apply over mulch and staple with 6-8 in. wire staples. Follow manufacturer's recommendations for installation. Best suited to slope application.

* Install the netting immediately after applying the mulch. In areas of concentrated water flow, lay it parallel to the direction of flow; on other slopes, lay it either parallel or perpendicular to direction of flow. Edges of adjacent netting strips should overlap 4-6 in., with the strip on the upgrade side of any lateral water flow on top. Installation details are site specific, so follow manufacturer's directions.

MAINTENANCE:

1. Inspect after storm events to check for movement of mulch or for erosion.
2. If washout, breakage, or erosion is present, repair the surface, then re-seed, re-mulch and, if applicable, install new netting.
3. Continue inspections until vegetation is firmly established.

SOIL ROUGHENING

DESCRIPTION:

Soil roughening is a temporary erosion control practice often used in conjunction with grading. Soil roughening involves increasing the relief of a bare soil surface with horizontal grooves by either stair-stepping (running parallel to the contour of the land) or using construction equipment to track the surface. Slopes that are not fine graded and left in a roughened condition can also reduce erosion. Soil roughening reduces runoff velocity, increases infiltration, reduces erosion, traps sediment, and prepares the soil for seeding and planting by giving seed an opportunity to take hold and grow.

APPLICABILITY:

Soil roughening is appropriate for all slopes, but works especially well on slopes greater than 3:1, on piles of excavated soil, and in areas with highly erodible soils. This technique is especially appropriate for soils that are frequently disturbed, because roughening is relatively easy. To slow erosion, roughen the soil as soon as possible after the vegetation has been removed from the slope or immediately after grading activities have ceased (temporarily or permanently). Use this practice in conjunction with seeding, planting, and temporary mulching to stabilize an area. A combination of surface roughening and vegetation is appropriate for steeper slopes and slopes that will be left bare for longer periods of time.

SITING AND DESIGN CONSIDERATIONS:

Roughened slope surfaces help establish vegetation, improve infiltration, and decrease runoff velocity. A rough soil surface allows surface ponding that protects lime, fertilizer, and seed and decreases erosion potential. Grooves in the soil are cooler and provide more favorable moisture conditions than hard, smooth surfaces. These conditions promote seed germination and vegetative growth.

Avoid excessive soil compacting, because this inhibits vegetation growth and causes higher runoff velocity. Limit roughening with tracked machinery to sandy soils that do not compact easily; also, avoid tracking on heavy clay soils, especially when wet. Seed roughened areas as quickly as possible, and follow proper procedures.

Depending on the type of slope and the available equipment, use different methods for roughening soil on a slope. These include stair-step grading, grooving, and tracking. When choosing a method, consider factors such as slope steepness, mowing requirements, whether the slope is formed by cutting or filling, and available equipment. Choose from the following methods for surface roughening:

- *Cut slope roughening for areas that will not be mowed.* Use stair-step grades or groove-cut slopes for gradients steeper than 3:1. Use stair-step grading on any erodible material that is soft enough to be ripped with a bulldozer. Also, it is well suited for slopes consisting of soft rock with some subsoil. Make the vertical cut distance less than the horizontal distance, and slope the horizontal portion of the step slightly toward the vertical wall. Keep individual vertical cuts less than 2 feet deep in soft materials and less than 3 feet deep in rocky materials.
- *Grooving.* This technique uses machinery to create a series of ridges and depressions that run across the slope along the contour. Make grooves using any appropriate implement that can be safely operated on the slope, such as disks, tillers, spring harrows, or the teeth on a front-end loader bucket. Make the grooves less than 3 inches deep and less than 15 inches apart.
- *Fill slope roughening for areas that will not be mowed.* Fill slopes with a gradient steeper than 3:1 should be placed in lifts less than 9 inches, and properly compact each lift. The face of the slope should consist of loose, uncompacted fill 4 to 6 inches deep. If necessary, roughen the face of the slopes by grooving the surface as described above. Do not blade or scrape the final slope face.
- *Cuts, fills, and graded areas that will be mowed.* Make mowed slopes no steeper than 3:1. Roughen these areas with shallow grooves less than 10 inches apart and deeper than 1 inch using normal tilling, disking, or harrowing equipment (a cultipacker-seeder can also be used). Excessive roughness is undesirable where mowing is planned.
- *Roughening with tracked machinery.* To avoid undue compaction of the soil surface, limit roughening with tracked machinery only to sandy soils. Operate tracked machinery perpendicularly to the slope to leave horizontal depressions in the soil. Tracking is generally not as effective as other roughening methods.

LIMITATIONS:

Soil roughening is not appropriate for rocky slopes. Tracked machinery can excessively compact the soil. Typically, soil roughening is effective only for gentle or shallow depth rains. If roughening is washed away in a heavy storm, re-roughen the surface and reseed.

MAINTENANCE CONSIDERATIONS:

Inspect roughened areas after storms to see if re-roughening is needed. Regular inspection should indicate where additional erosion and sediment control measures are needed. If rills (small watercourses that have steep sides and are usually only a few inches deep) appear, fill, regrade, and reseed them immediately. Use proper methods.

EFFECTIVENESS:

Soil roughening provides moderate erosion protection for bare soils while vegetative cover is being established. It is inexpensive and simple for short-term erosion control when used with other erosion and sediment controls.

TOPSOIL (SALVAGE AND UTILIZATION)

SALVAGING AND STOCKPILING:

1. Determine depth and suitability of topsoil at the site.
2. Prior to stripping topsoil, install any site-specific downslope practices needed to control runoff and sedimentation.
3. Remove the soil material no deeper than what the county soil survey describes as "surface soil" (i.e., A or Ap horizon).
4. Stockpile the material in accessible locations that neither interfere with other construction activities nor block natural drainage; and install silt fences, straw bales, or other barriers to trap sediment. (Several smaller piles around the construction site are usually more efficient and easier to contain than one large pile.)
5. If soil is stockpiled for more than 6 mos., it should be temporarily seeded or covered with a tarp or surrounded by a sediment barrier.

SPREADING TOPSOIL:

1. Prior to applying topsoil, grade the subsoil and roughen the top 3-4 in. by disking. This helps the topsoil bond with the subsoil.
2. Do not apply topsoil when the site is wet, muddy or frozen, because it makes spreading difficult, inhibits bonding, and can cause compaction problems.
3. Apply topsoil evenly to a depth of at least 4 in. (8-12 in. if the underlying material is bedrock, loose sand, rock fragments, gravel or other unsuitable soil material) Compact slightly to improve contact with the subsoil.
4. After spreading, grade and stabilize.

MAINTENANCE:

1. Inspect newly topsoiled areas frequently until vegetation is established.
2. Repair eroded or damaged areas and replant.

TEMPORARY SEEDING

SITE PREPARATION:

1. These installation practices are needed to control erosion, sedimentation, and water runoff, such as temporary and permanent diversions, sediment traps or basins, silt fences, and triangular silt dikes.
2. Grade the site as specified in the construction plan.

SEEDBED PREPARATION:

1. Fertilize as required.
2. Work the fertilizer into the soil 2-4 in. deep with a disk or rake operated across the slope.

SEEDING:

1. Select a seeding mixture and rate from the table and plant at depth and on dates shown.
2. Apply seed uniformly with a drill or cultipacker-seeder or by broadcasting, and cover to the depth shown.
3. If drilling or broadcasting, firm the seedbed with a roller or cultipacker.
4. Mulch seeded areas to increase seeding success.

MAINTENANCE:

1. Inspect periodically after planting to see that vegetative stands are adequately established, re-seed if necessary.
2. Check for erosion damage after storm events and repair, reseed and mulch if necessary.
3 Topdress fall seeded wheat or rye seeding with 50 lbs./acre of nitrogen in February or March if nitrogen deficiency is apparent.

TEMPORARY SEEDING RECOMMENDATIONS

SEED SPECIES*	RATE/ACRE	PLANTING DEPTH	OPTIMUM DATES**
Wheat or rye	150 lbs.	1 to 1 1/2 in.	9/15 to 10/30
Spring oats	100 lbs.	1 in.	3/1 to 4/15
Annual ryegrass	40 lbs.	1/4 in.	3/1 to 5/1 8/1 to 9/1
German millet	40 lbs.	1 to 2 in.	5/1 to 6/1
Sudangrass	35 lbs.	1 to 2 in.	5/1 to 7/30

* Perennial species may be used as a temporary cover, especially if the area to be seeded will remain idle for more than a year.

** Seeding done outside the optimum dates increases the chance of seeding failure.

PERMANENT SEEDING

PERMANENTLY SEED ALL FINAL GRADE AREAS (e.g., landscape berms, drainage swales, erosion control structures, etc.) AS EACH IS COMPLETED AND ALL AREAS WHERE ADDITIONAL WORK IS NOT SCHEDULED FOR A PERIOD OF MORE THAN A YEAR.

SITE PREPARATION:

1. These installation practices are needed to control erosion, sedimentation, and water runoff, such as temporary and permanent diversions, sediment traps or basins, silt fences, and triangular silt dikes.
2. Grade the site as specified in the construction plan and fill in depressions that can collect water.
3. Add topsoil to achieve needed depth for establishment of vegetation.

SEEDBED PREPARATION:

1. Fertilize as required.
2. Till the soil to obtain a uniform seedbed, working the fertilizer into the soil 2-4 in. deep with a disk or rake operated across the slope.

SEEDING:

Optimum seeding dates are March 1-May 10 and August 10-September 30. Permanent seeding done between May 10 and August 10 may need to be irrigated. As an alternative, use temporary seeding until the preferred date for permanent seeding.

1. Select a seeding mixture and rate from the table and plant at depth and on dates shown.
2. Apply seed uniformly with a drill or cultipacker-seeder or by broadcasting, and cover to the depth shown.
3. If drilling or broadcasting, firm the seedbed with a roller or cultipacker.
4. Mulch seeded areas. Use erosion control blankets on sloping areas. If seeding is done with a hydroseeder, fertilizer and mulch can be applied with the seed in a slurry mixture.

MAINTENANCE:

1. Inspect periodically after planting to see that vegetative stands are adequately established, re-seed if necessary.
2. Check for erosion damage after storm events and repair, reseed and mulch if necessary.

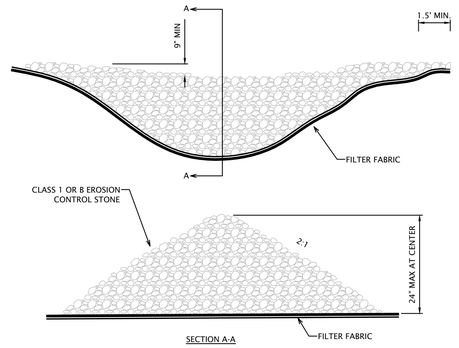
PERMANENT SEEDING RECOMMENDATIONS:

This table provides several seeding options. Additional seed species and mixtures are available commercially. When selecting a mixture, consider site conditions, including soil properties (e.g., soil pH and drainage), slope aspect and the tolerance of each species to shade and drought.

SEED SPECIES AND MIXTURES	RATE/ACRE	OPTIMUM SOIL pH
OPEN AND DISTURBED AREAS (REMAINING IDLE FOR MORE THAN ONE YEAR.		
1. Perennial ryegrass	35-50 lbs.	5.6 to 7.0
+ white or ladino clover	1 to 2 lbs.	
1. Kentucky bluegrass	20 lbs.	5.5 to 7.5
+ smooth bromegrass	10 lbs.	
+ switchgrass	3 lbs.	
+ timothy	4 lbs.	
+ perennial ryegrass	10 lbs.	
+ white or ladino clover	1 to 2 lbs.	

RUN-OFF CONTROL MEASURES

RIP-RAP CHECK DAMS



SECTION A-A

MAINTENANCE:

1. Inspect after each storm event.
2. Remove built-up sediment and repair/replace the check dams as needed.

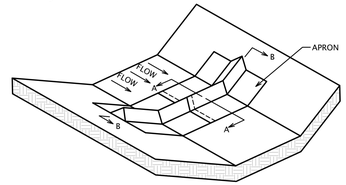
TRIANGULAR SILT FENCE DIKE - CHECK DAMS

MATERIAL: The triangular-shaped inner material shall be urethane foam. The outer cover shall be a woven geotextile fabric placed around the inner material and allowed to extend beyond both sides of the triangle two to three (2' - 3') feet.

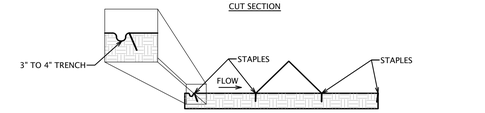
ANCHORING: The Dikes shall be attached to the ground with Wire Staples. The Staples shall be No. 11 gauge wire and be at least six to eight (6" - 8") inches long. Staples shall be placed as indicated on the installation detail.

INSTALLATION:

1. Place triangular silt fence dike as required.
2. Attach dikes to the ground with staples as indicated on the detail.

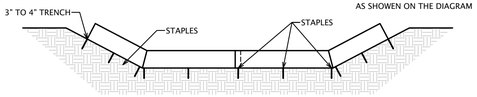


SLIT DIKE UNIT
CUT SECTION



DETAIL A-A

STAPLES SHALL BE PLACES WHERE THE UNITS OVERLAP AND IN THE CENTER OF THE 7' UNIT AS SHOWEN ON THE DIAGRAM



POINT "1" MUST BE HIGHER THAN POINT "2" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS

DIKE SECTION
DETAIL B-B

MAINTENANCE:

1. Inspect after each storm event.
2. Remove built-up sediment and repair/replace the silt dikes as needed.

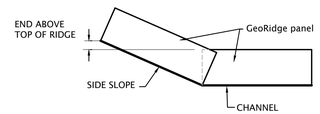
GEORIDGE DITCH BERM - CHECK DAMS

MATERIAL: GeoRidge or GeoRidge Bio by Nilex Products
a HDPE product that serves to dissipate water energy within a ditch or channel.

GeoRidge is to be used in applications where the measure will be removed after the channel is stablized.
GeoRidge Bio can be used when the measure can be left to decompose in lieu of being removed.

INSTALLATION:

1. Place an erosion control blanket (ECB), laid parallel with the channel direction, in the area where the GeoRidge is to be placed.
   ECB shall be appropriate for the channel slope, volume and velocity.
   ECB shall be secured with a 4" trench at the upstream edge, with min. 6" staples placed 21" o.c. along the upstream and downstream edges.
2. Place GeoRidge berm in the middle of the ECB, perpendicular to the channel flow direction, and anchor with 10" spiral spikes.
   A minimum of 3 anchors shall be used on the upstream side and 2 anchors on the downstream side.
   If more than one GeoRidge berm panel is required to span the channel, line up the anchoring holes for installation of the anchors.
3. When placing the GeoRidge panel on the side slope of the channel, the bottom of the panels should meet with the ridge being overlapped.
   This will prevent water from passing through the berm.
   Additionally the outside edge of the panel on the side slope should be installed so that it is higher than the top of the panel in the channel bottom.



4. SPACING:
   The spacing is calculated by dividing the height of the GeoRide by the gradient of the channel slope.
   9"/.02 gradient = 450" or 37.5'

MAINTENANCE:

1. Inspect after each storm event.
2. Remove built-up sediment when it reaches 1/2 the height of the GeoRidge.
3. Repair/replace the GeoRidge and the ECM as needed.

SEDIMENT CONTROL MEASURES

POLYMER SYSTEMS

MATERIAL: APS 700 Series Floc Log

INSTALLATION:

1. The Floc Log vendor shall sample the water that is to be treated with the system.
   This sample shall be used to determine the site-specific polymer mix that should be used.
2. In applications where the the objective of this measure is to meet the Total Suspended Solids requirements prior to completion of the detention pond; i.e. the side slopes are not fully stabilized, dewatering the pond for further expansion, etc., the Floc Log should be installed at the end of the outfall pipe and a temporary material such as GeoJute should be placed downstream of the Floc Log providing a sediment settling area. (See plans for specific installation locations)
3. In applications where the the objective of this measure is to meet the Total Suspended Solids requirements after the detention pond is completed, the Floc Log should be installed at the end of the inlet pipes into the detention pond. This will cause the sediment to settle more quickly in the wet detention pond, providing a cleaner discharge. (See plans for specific installation locations)
4. Following the use of the Floc Log, the settled sediment will need to be removed. This temporary settling media removed, or the detention pond might need to be cleaned if sediment settling has significantly reduced the pond volume.

MAINTENANCE:

1. Inspect after storm events to check for movement of mulch or for erosion.
2. If washout, breakage, or erosion is present in the sediment settling media, repair the media.
3. Be sure the Floc Log is secure attached at the installed location, verify that storm water is having contact with the Floc Log.

FIBER ROLLS

MATERIAL: Tube shaped fiber rolls filled with straw, flax, rice, coconut fiber material, mulch, or composted material. Each roll is wrapped with UV-degradable polypropylene netting for longevity or with 100 percent biodegradable materials like burlap, jute, or coir.

INSTALLATION:

1. Install rolls parallel with the slope contour, with the ends slightly lower than the mid-section, to prevent water ponding at the mid-section. Turn the ends slighty upslope to prevent water from bypassing the measure.
2. Excavate a trench with a width and depth equal to one-fourth the diameter of the log.
3. Where applicable install the measure upslope of a curb or sidewalk. Placing the measure against the curb will provide additional stability and resistaance to surface flow.
4. Place rolls end to end to form a continuous barrier.
5. Hardwood stakes shall be driven through the rolls, spaced no greater than 5' to a depth of 18".
6. The fiber rolls should be fastened to the hardwood stakes with rope.
7. Backfill the trench with excavated soil to ground level on the down-slope side and 2" above ground level on the up-slope side of the roll.

MAINTENANCE:

1. The rolls should be inspected weekly and after each rainfall event. Inspection should include if the material's diameter is less than specification and if the outer netting has been degraded or broken.
2. Remove accumulated sediment when it reaches one-quarter of the height of the roll.
3. Repair eroded and damaged areas.
4. If ponding becomes excessive, rolls should be removed and either reconstructed or new product installed.

SEDIMENT BASINS

MATERIAL: Depressional areas constructed at the outfall of pipes, end of channels, or end of surface sheet flow, which serves to settle out the suspended solids.

INSTALLATION:

1. At locations shown on the plans, the contractor shall excavate a small basin.
   The basin size shall be shown on the plans and is determined by the volume of water tributary to the basin. The basin overflow elevation shall be lower than the incoming water, by a minimum of 12 inches.
2. The basin shall be lined with a geotextile fabric, 9" of 4" riprap shall be placed all around the inside of the basin.

MAINTENANCE:

1. The basins should be inspected weekly and after each rainfall event.
2. Replace and restore any basin bank erosion.
3. Repair or replace any displaced riprap.
4. Reexcavate and replace the basin when it becomes more than 50% full of sediment.

DEWATERING BAGS

MATERIAL: "Dandy" Dewatering Bag or "Pump-It" Dewatering Bag

INSTALLATION:

1. At location of the dewatering pump outfall.
2. Size the bag to the discharge rate, the maximum bag size may limit the discharge rate of the pump.
3. Connect bag to pump outfall per manufacturer's instructions.
4. Install bag upstream of the receiving structure location.
5. Outlet to grass area if possible.

MAINTENANCE:

1. The basins should be inspected prior to each use.
2. Replace bag when it is half full.

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NOT FOR CONSTRUCTION

FRANCISCAN ALLIANCE
FRANCISCAN HEALTHCARE-MUNSTER
701 SUPERIOR AVENUE
MUNSTER, IN 46321

DVG # 15-D-1058

REVISIONS AND NOTES:	DATE:

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CANCER TREATMENT CENTER/M.O.B
PARKING LOT EXPANSION

S.W.P.P.P. DETAILS

SCALE: NTS
DESIGN BY: DVG
DRAWN BY: DVG
DATE: 11-20-2015

C303

NOT FOR CONSTRUCTION

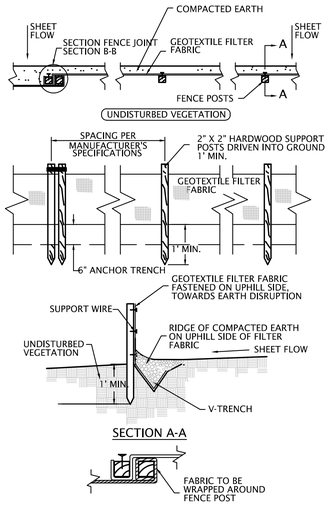
SEDIMENT CONTROL MEASURES (continued)

SILT FENCE

APPROACH: Pool area flat (less than 1% slope), with sediment storage of 945 cu.ft./acre disturbed.
MATERIAL:
- Amoco No. 2130 silt stop with posts, manufactured by Mid-West Construction Products at 1-800-426-9647 or 1-317-781-2380, or approved equal.
- When construction will be on going for more than 90 days, SS-700 SiltSaver Belted fence, or approved equal should be considered for longevity.

ANCHORING: 2 x 2 in. hardwood stakes with a length equal to the height of the silt fence plus 1 ft.

INSTALLATION
1. Drive stakes 1 ft. min. into ground and attach fabric to stakes with stapler.
2. Bottom of fabric shall be placed under 6 inches of compacted soil to prevent sediment flow underneath the fence.
3. Ensure that all supporting posts are on the down slope side of the fencing.



MAINTENANCE
1. Inspect after each storm event.
2. Remove built-up sediment and repair/replace the silt fence as needed.

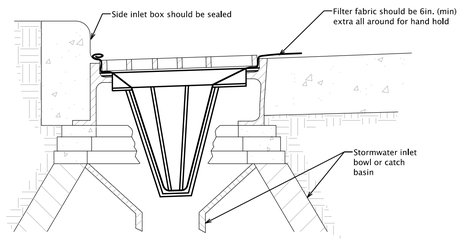
ADDITIONAL CONSIDERATIONS
1. When protecting slopes, fences should be installed parallel to the slope contour.
2. On slopes the steepness of grade will determine the maximum distance between parallel fences.

less than 2%	100ft maximum
between 2% and 5%	75ft maximum
greater than 5%	additional surface stabilization shall be provided.

BASKET CURB INLET PROTECTION

CONTRIBUTING DRAINAGE AREA: 1/4 acre maximum.
LOCATION: At curb inlets where barriers surrounding them would be impractical or unsafe.
MATERIAL: CATCH-ALL STORMWATER INLET PROTECTOR or approved equal.
Marathon Materials, Inc. 1-800-983-9493 or www.marathonmaterials.com
CAPACITY: Runoff from a 2-yr frequency, 24-hr duration storm event entering a storm drain without by-pass flow.
BASKET: Fabricated metal with top width-length dimensions such that the basket fits into the inlet without gaps.
GEOTEXTILE FABRIC: for filtration.

INSTALLATION
1. Install basket curb inlet protections as soon as inlet boxes are installed in the new development or before land disturbing activities begin in a stablized area.
2. If necessary, adapt basket dimensions to fit inlet box dimensions, which vary according to the manufacturer and/or model.
3. Seal the side inlets on those types of inlet boxes that have them.
4. Remove the grate and place the basket in the inlet.
5. Cut and install a piece of filter fabric large enough to line the inside of the basket and extend at least 6 inches beyond the frame.
6. Replace the inlet grate, which also serves to anchor the fabric.

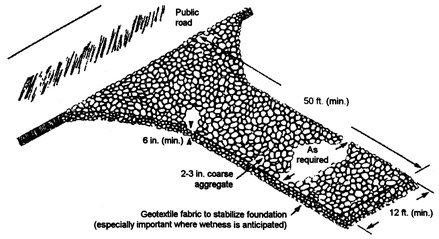


MAINTENANCE
1. Inspect after each storm event.
2. Remove built-up sediment and replace the geotextile fabric after each storm event.
3. Periodically remove sediment and tracked-on soil from the street (but not by flushing with water) to reduce the sediment load on this curb inlet practice.

COMMON CONCERNS
1. Sediment not removed and geotextile fabric not replaced following a storm event - results in increased sediement, tracking, traffic hazard, and excessive ponding.
2. Geotextile fabric permittivity too low - results in rapid clogging, thus severe ponding, sediment enters the drain if the fabric breaks.
3. Drainage area too large - results in sediment overload and severe ponding; sediment enters the drain if the fabric breaks.

TEMPORARY CONSTRUCTION ENTRANCE/EXIT PAD

MATERIAL: 2-3 in. washed stone (INDOT CA No. 2) over a stable foundation.
THICKNESS: 6 in. minimum.
WIDTH: 12 ft. minimum or full width of entrance/exit roadway, whichever is greater.
LENGTH: 50 ft. minimum. The length can be shorter for small sites such as for an individual home.
WASHING FACILITY (optional): Level area with 3 in. washed stone minimum or a commercial rack, an waste water diverted to a sediment trap or basin (Practice 3.72).
GEOTEXTILE FABRIC UNDERLINER: May be used under wet conditions or for soils within a high seasonal water table to provide greater bearing strength.

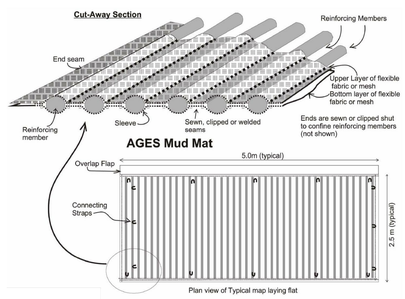


INSTALLATION
1. Avoid locating on steep slopes or at curves in public roads.
2. Remove all vegetation and other objectionable material from the foundation area, and grade and crown for positive drainage.
3. If slope towards the road exceeds 2%, construct a 6-8 in. high water bar (ridge) with 3:1 side slopes across the foundation area about 15 ft. from the entrance to divert runoff away from the road (Practice 3.24) see exhibit.
4. Install pipe under the pad if needed to maintain proper public road drainage.
5. If wet conditions are anticipated, place geotextile fabric on the graded foundation to improve stability.
6. Place stone to dimensions and grade shown in the erosion/sediment control plan, leaving the surface smooth and sloped for drainage.
7. Divert all surface runoff and drainage from the stone pad to a sediment trap or basin.

MAINTENANCE
1. Inspect entrance pad and sediment disposal area weekly and after storm events or heavy use.
2. Reshape pad as needed for drainage and runoff control.
3. Topdress with clean stone as needed.
4. Immediately remove mud and sediment tracked or washed onto public roads by brushing or sweeping. Flushing should only be used if the water is conveyed into a sediment trap or basin.
5. Repair any broken road pavement immediately.

MUD MATS - ENTRANCE STABILIZATION

MATERIAL: MUD MAT BY AGES, REUSEABLE SOIL STABILIZATION SYSTEM



INSTALLATION
1. Avoid locating on steep slopes or at curves in public roads.
2. Remove all vegetation and other objectionable material from the foundation area, and grade and crown for positive drainage.
3. Install per manufacturer's recommendations. Unroll, connect mats together to form area of protection and properly anchor to ground.
4. Divert all surface runoff and drainage from the mud mat to a sediment trap or basin.
5. Minimum size of the mat is 12' wide and 50' long.

MAINTAINENCE
1. Inspect entrance pad daily and remove built-up debris as necessary.
2. Inspect entrance pad for breaks and tears in the material. Repair or replace as necessary.
3. Immediately remove mud and sediment tracked or washed onto public roads by brushing or sweeping. Flushing should only be used if the water is conveyed into a sediment trap or basin.
4. Repair any broken road pavement immediately.

MATERIAL MANAGEMENT MEASURES (HOUSEKEEPING)

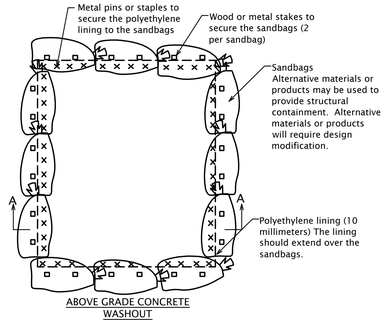
CONCRETE WASHOUT

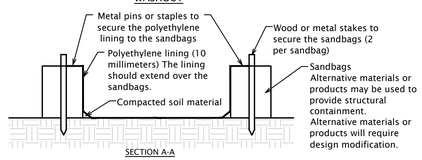
LOCATION
- Locate concrete washout systems at least 50 feet from any creeks, wetlands, ditches, karst features, or storm drains/manmade conveyance systems.
- Locate concrete washout systems in relatively flat areas that have established vegetative cover and do not receive runoff from adjacent land areas.
- Locate away from other construction traffic in areas that provide easy access for concrete trucks.

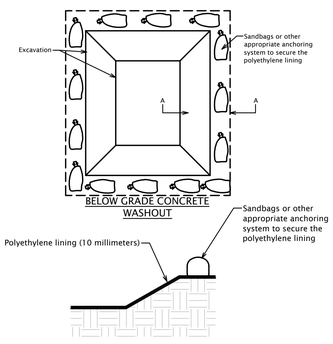
MATERIALS
- Minimum of ten mil polyethylene sheeting, free of holes, tears, and other defects.
- Orange safety fencing or equivalent.
- Sandbags
- Metal pins or staples six inches in length minimum.

INSTALLATION
- A base shall be constructed and prepared that is free of rocks and other debris that may cause tears or punctures in the polyethylene lining.
- Install the polyethylene lining. For excavated systems, the lining should extend over the entire excavation. The lining for bermed systems should be installed over the pooling area with enough material to extend the lining over the berm or containment system. The lining should be secured with pins, staples, or other fasteners.
- Place flags, safety fencing, or equivalent to provide a barrier to construction equipment and other traffic.
- Install signage that identifies concrete washout areas.
- Where necessary, provide stable ingress and egress or alternative approach pad.

MAINTENANCE
- Inspect daily and after each storm event.
- Inspect the system for leaks, spills, and tracking of soil by equipment.
- Inspect the polyethylene lining for failure, including tears and punctures.
- Once concrete wastes harden, remove and dispose of the material.
- Excess concrete should be removed when the washout system reaches 50 percent of the design capacity. Use of the system should be discontinued until appropriate measures can be initiated to clean the structure.
- Upon removal of the solids, inspect the structure. Repair the structure as needed or construct a new system.
- Dispose of all concrete in a legal manner. Reuse the material on site, recycle, or haul the material to an approved construction/demolition landfill site. Recycling of material is encouraged. The waste material can be used for multiple applications including but not limited to roadbeds and building. The availability for recycling should be checked locally.
- The plastic liner should be replaced after every cleaning; the removal of material will usually damage the lining.
- The concrete washout system should be repaired or enlarged as necessary to maintain capacity for concrete waste.
- Concrete washout systems are designed to promote evaporation. However, if the liquids do not evaporate and the system is near capacity it may be necessary to vacuum or remove the liquids and dispose of them in an acceptable method. Disposal may be allowed at the local sanitary sewer authority provided their National Pollutant Discharge Elimination System permits allow for acceptance of this material. Another option would be to utilize a secondary containment system or basin for further dewatering.
- Inspect construction activities on a regular basis to ensure suppliers, contractors, and others are utilizing designated washout areas. If concrete waste is being disposed of improperly, identify the violators and take appropriate action.
- When concrete washout systems are no longer required, the concrete washout systems shall be closed. dispose of all hardened concrete and other materials used to construct the system.
- Holes, depressions, and other land disturbances associated with the system should be backfilled, graded, and stabilized.







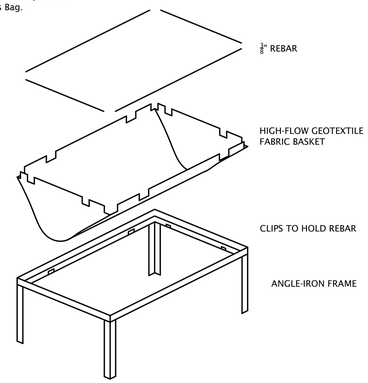
COMMON CONCERNS
- Complete construction/installation of the system and have washout locations operational prior to concrete delivery.
- It is recommended that washout systems be restricted to washing concrete from mixer and pump trucks and not used to dispose of excess concrete or residual loads due to potential to exceed the design capacity of the washout system.
- Install systems at strategic locations that are convenient and in close proximity to work areas and in sufficient number to accommodate the demand for disposal.
- Install signage identifying the location of concrete washout systems.

FRYEFLOW FILTRATION SYSTEMS WASHOUT

MATERIALS
FryeFlow Filtration Systems concrete washout device.

INSTALLATION
- Insert Rebar into pockets of Debris Bag.
- Install FryeFlow Systems Debris Bag into Angle Iron Frame.
- Make sure rebar sets behind rebar brackets.
- Make sure frame and bag is set on flat surface
- Install signage that identifies concrete washout areas.
- Where necessary, provide stable ingress and egress or alternative approach pad.

MAINTENANCE
- Once Debris Bad is full, use handles provided to lift out of frame.
- Remove rebar from side pockets.
- Insert new Debris Bag.



SPILL PREVENTION AND CONTROL PLAN

- Only approved fuel storage tank shall be allowed on site.
- Spill Kits must be located on-site in the vicinity of the fuel storage sink.
- Mobile Fueling shall be used wheever possible.
- Fueling should take place in a central location.
- Equipment should be kept in good working order, well maintained so that breakdowns, and equipment failures are reduced.

FUEL STORAGE

- All fuel tanks on site shall have secondary containment approved by IDEM.
- No fuel tanks are to be located within 100 feet of a storm sewer inlet.
- Fuel storage system shall be kept in good working order and shall be subject to periodic IDEM inspections.
- Spill Kits must be located on-site in the vicinity of the fuel storage sink.
- Fuel tanks shall have a safety guage.

STOCKPILES

The contractor shall locate topsoil stockpiles on-site as noted on the S.W.P.P.P. and shall encompass each with sediment ditch and silt fence.

In cases where the stockpile is small and will be removed from the site within 15 days, the contractor can cover the stockpile with a waterproof tarpauline type cover.

No off-site stockpiles are being proposed. Any off-site stockpiles that the contractor utilizes shall follow the same requirements as on-site stockpiles. The contractor shall identify to the local S.W.P.P.P. enforcement agency the locations of any off-site stockpiles.

TEMPORARY FACILITIES

The contractor shall follow the procedures delineated on the plan in order to construct and maintain the facilities shown on the drawings to control water and wind erosion during construction of the project.

All disturbed surface areas (including utility trenches) shall be temporarily graded and/or ditched to direct water runoff from such areas to sedimentation control devices which will prevent disturbing eroded water carrying soil from entering a watercourse, sewer, or adjacent lands. Such sedimentation control devices shall include but not be limited to protective ditches, sediment traps, sediment filters, ditch traps, pipe barriers, sike dikes, check dams, chemical settling filters.

Upon completion of the rough grading all areas not effected by construction traffic shall be permanently seeded, and erosion control blankets installed on side slopes that exceed 5:1.

Upon completion of the storm sewer system, inlet protection shall be installed, check dams installed in the swales, and temporary riprap with settling basins placed at the outfalls of all pipe.

In roadway areas temporary aggregate surfacing shall be placed immediately after the backfilling has been completed. Positive dust control measures shall be taken at all times.

Within 14 days from the date a project improvement is installed the contractor shall proceed with final cleanup and restoration of the project area disturbed including spoil areas, and complete such operations within the next 15 days. If seasonal conditions prevent final cleaning and restoration, the contractor shall proceed with temporary stabilization of the disturbed areas. Final cleanup and restoration will consist of final grading, applying topsoil, seeding and mulching and/or sodding of all disturbed areas of the project. Temporary stabilization shall consist of rough grading the disturbed areas to a condition ready to receive topsoil, seeding, and mulching in accordance with the temporary seeding schedule. Temporary stabilization materials shall be removed, disposed of, and final cleanup and restoration shall be completed not later than 60 days after seasonal conditions allow performance of the required work.

MATERIAL HANDLING AND STORAGE

The contractor shall minimize the disturbance of excavated soils by minimizing the number of times the soil is handled. On-site handling of soils will occur during excavation, loading, and spreading activities. Fuel for heavy equipment and vehicles will not be stored on the site during construction operations. Mobile fuel tanks will fuel heavy equipment. In the event of a spill or leak the contractor shall follow proper procedures to minimize concern. The contractor shall:

- Take immediate measures to control and contain the spill to prevent release into sewers or surface waters.
- Notify the Local Fire Department immediately at 9-1-1.
- Notify the Federal Emergency Spill Hotline at 1-800-424-8802 within 2 hours if the amount is above a reportable quantity or any amount enters a waterway or storm sewer.
- Notify the Indiana Emergency Response Hotline at 1-888-233-7745.
- Follow the guidelines for handling the spill as outlined in the included Material Safety Data

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FRANCISCAN ALLIANCE
FRANCISCAN HEALTHCARE-MUNSTER
701 SUPERIOR AVENUE
MUNSTER, IN 46321

DVG # 15-D-1058	
REVISIONS AND NOTES:	DATE:

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CANCER TREATMENT CENTER/M.O.B
PARKING LOT EXPANSION

S.W.P.P.P. DETAILS

SCALE: NTS
DESIGN BY: DVG
DRAWN BY: DVG
DATE: 11-20-2015

C304

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