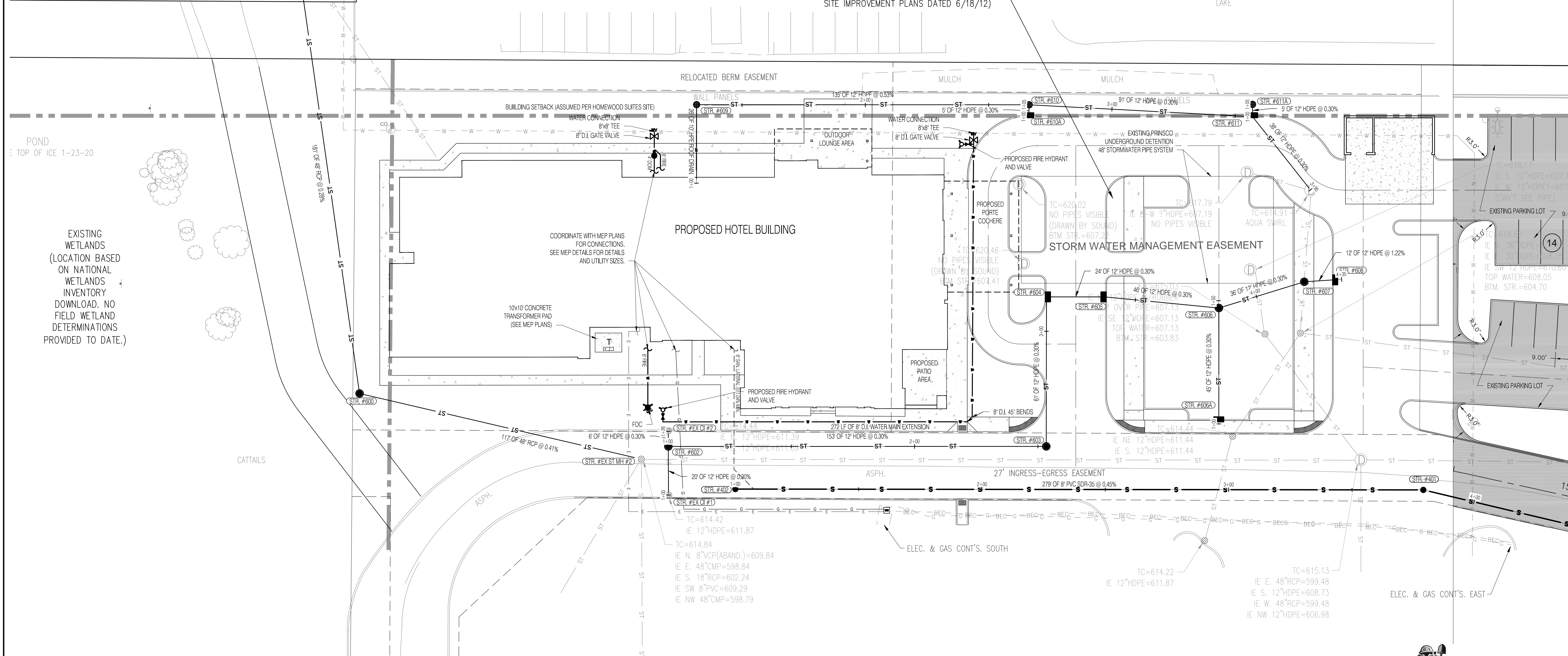
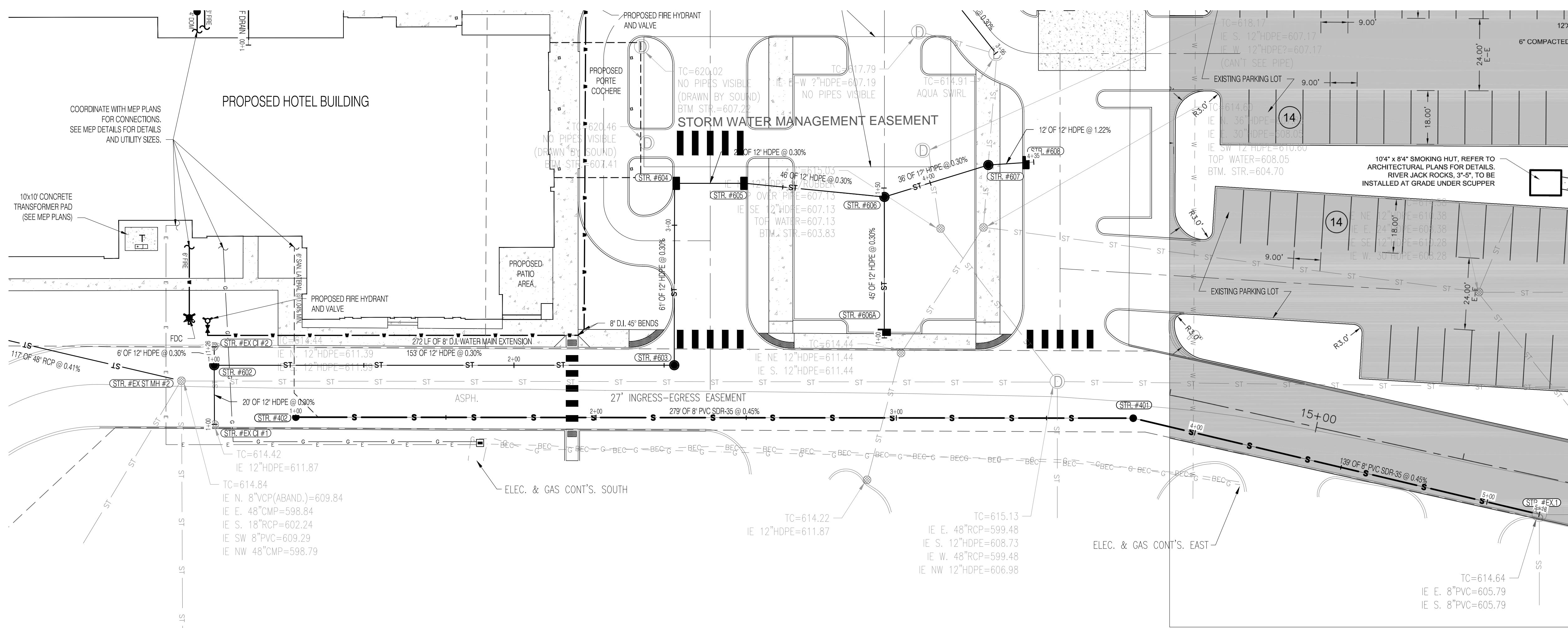


| STORM STRUCTURE DATA TABLE | | | | | | |
|----------------------------|--------|------------|------------|----------|-----------|--|
| STR. # | TC | INV. IN | INV. OUT | PIPES IN | PIPES OUT | STR. & CASTING TYPE |
| EX ST MH #2 | 614.84 | | 588.79 (W) | | 48" RCP | 60 inch Cylindrical Structure Neenah R-6041 Solid Lid |
| 600 | 616.83 | 596.31 (E) | 598.30 (N) | 48" RCP | 48" RCP | 72 inch Cylindrical Structure Neenah R-6041 Solid Lid |
| 601 | 614.31 | 597.79 (S) | | 48" RCP | | 72 inch Cylindrical Structure Neenah R-6041 Solid Lid |

- 0 20 40

SCALE: 1" = 20'





SANITARY PLAN

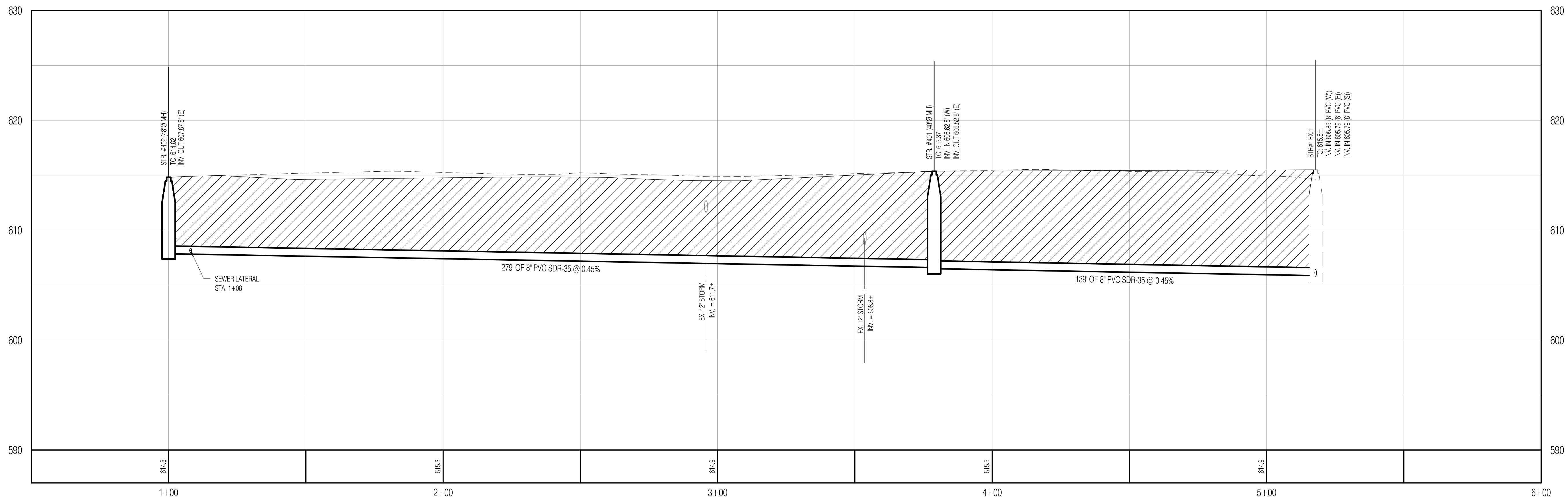
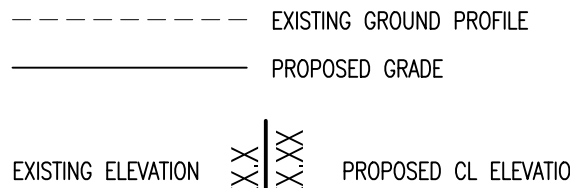
Scale: 1" = 20'-0"

LEGEND:

- RIGHT OF WAY LINE (EXISTING R/W)
- EASEMENT LINE
- CENTER LINE
- RIGHT OF WAY LINE (NEW R/W)
- LOT LINE
- PARKING STRIPING
- WATER MAIN
- STORM SEWER
- SANITARY SEWER
- EXISTING
- MANHOLE
- TOP OF CURB/TOP OF CASTING GRADE
- GRANULAR BACKFILL

GENERAL NOTES

- ALL MAIN AND LATERAL ROAD CROSSINGS SHALL BE FULL-DEPTH GRANULAR BACKFILL.
- MINIMUM SLOPES PER TEN STATES STANDARDS SHALL PREVAIL IN ALL CASES.
- SEWER LATERALS SHALL EXTEND TO A POINT NO LESS THAN 5 FEET AND NO GREATER THAN 7 FEET FROM THE BUILDING LINE, AS SHOWN.
- LATERALS SHALL BE INSTALLED NO GREATER THAN 6 FEET BELOW PAD GRADE AT LATERAL END.
- MANHOLE STRUCTURES TO BE CONSTRUCTED TO REQUIRE ONE (1) 4-INCH RISER RING, NO MORE, NO LESS TO MEET PLAN T.O.C.
- ALL SANITARY SEWER LATERALS SHALL HAVE LOCATE WIRE RUN WHEN INSTALLING.
- SANITARY SEWER SHALL BE 8" PVC, SDR 35.



SANITARY PROFILE

Scale: 1" = 20'-0"



REVISION NUMBER

REVISION DATE

REVISION DESCRIPTION

CONSULTANTS

shrewsberry
7321 SHADELAND STATION, INDIANAPOLIS, IN 46256
(317) 441-4777 • (317) 441-4780
shrewsberry.com

3839 PRIORITY WAY SOUTH DRIVE
SUITE 200
INDIANAPOLIS, INDIANA 46240
Phone (317) 844-6777
E-Mail cripe@crpe.biz
CRAIG CRIFE, P.E. (317) 844-6777
DAVID CRIFE, P.E. (317) 844-6777
SHERYLL CRIFE, P.E. (317) 844-6777
SHERYLL CRIFE, P.E. (317) 844-6777
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SANITARY PLAN AND PROFILE

GENERAL HOTELS CORPORATION

HOME2 SUITES BY HILTON

MUNSTER, IN

MATTHEW D. WALLACE
REGISTERED PROFESSIONAL ENGINEER
No. 10302418
STATE OF INDIANA

Drawn By

RDR

Checked By

MDW

By

BK

As indicated

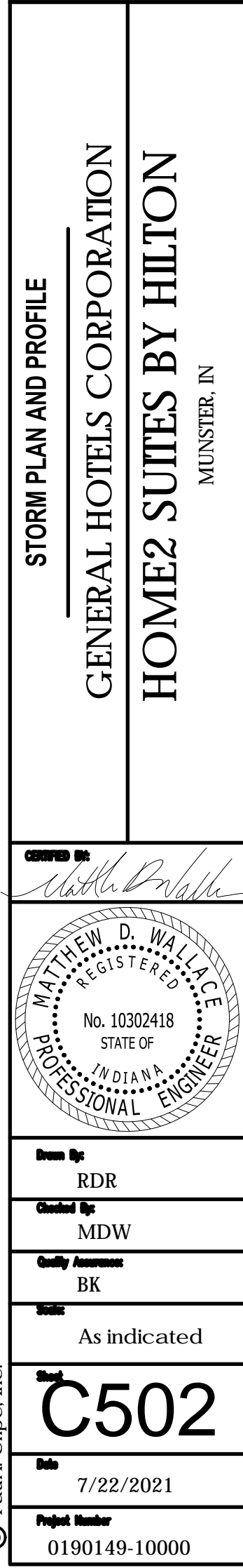
Paul L. Cripe, Inc.

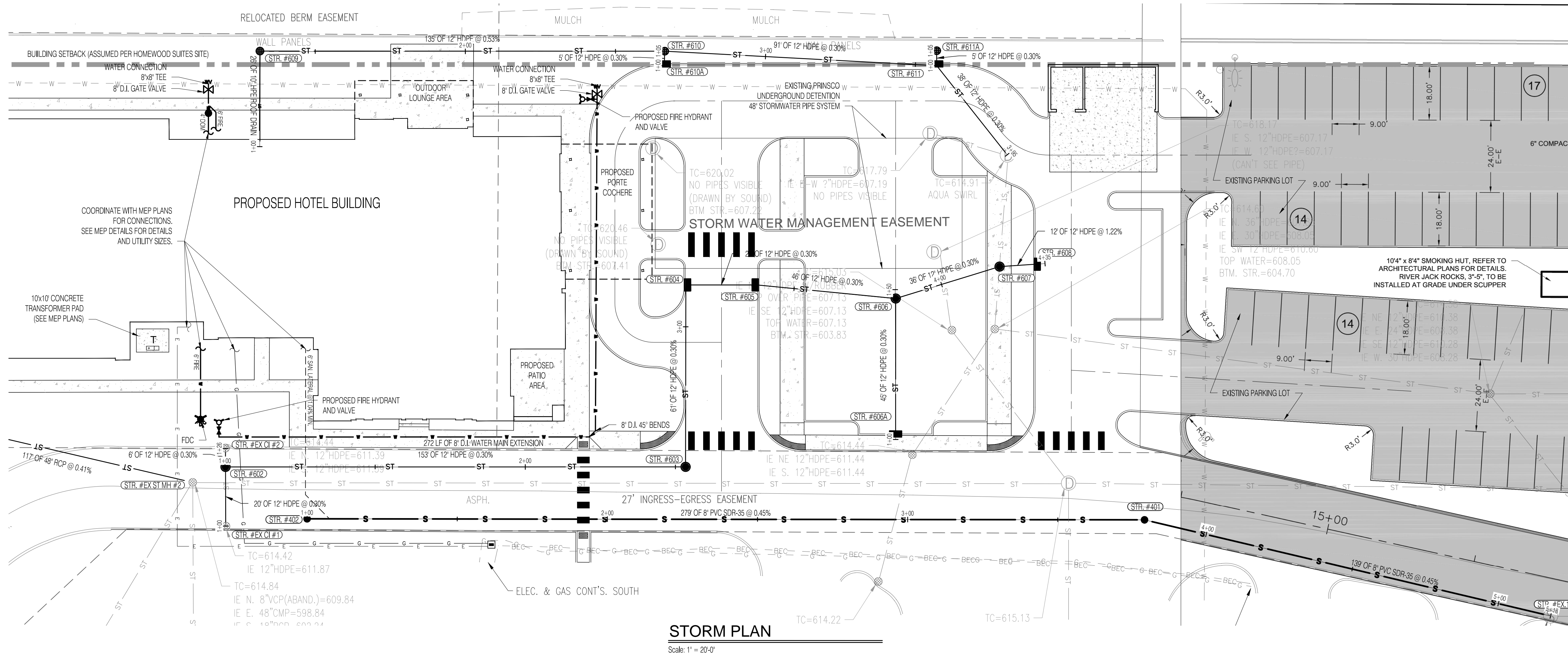
C501

7/22/2021

Project Number

0190149-10000



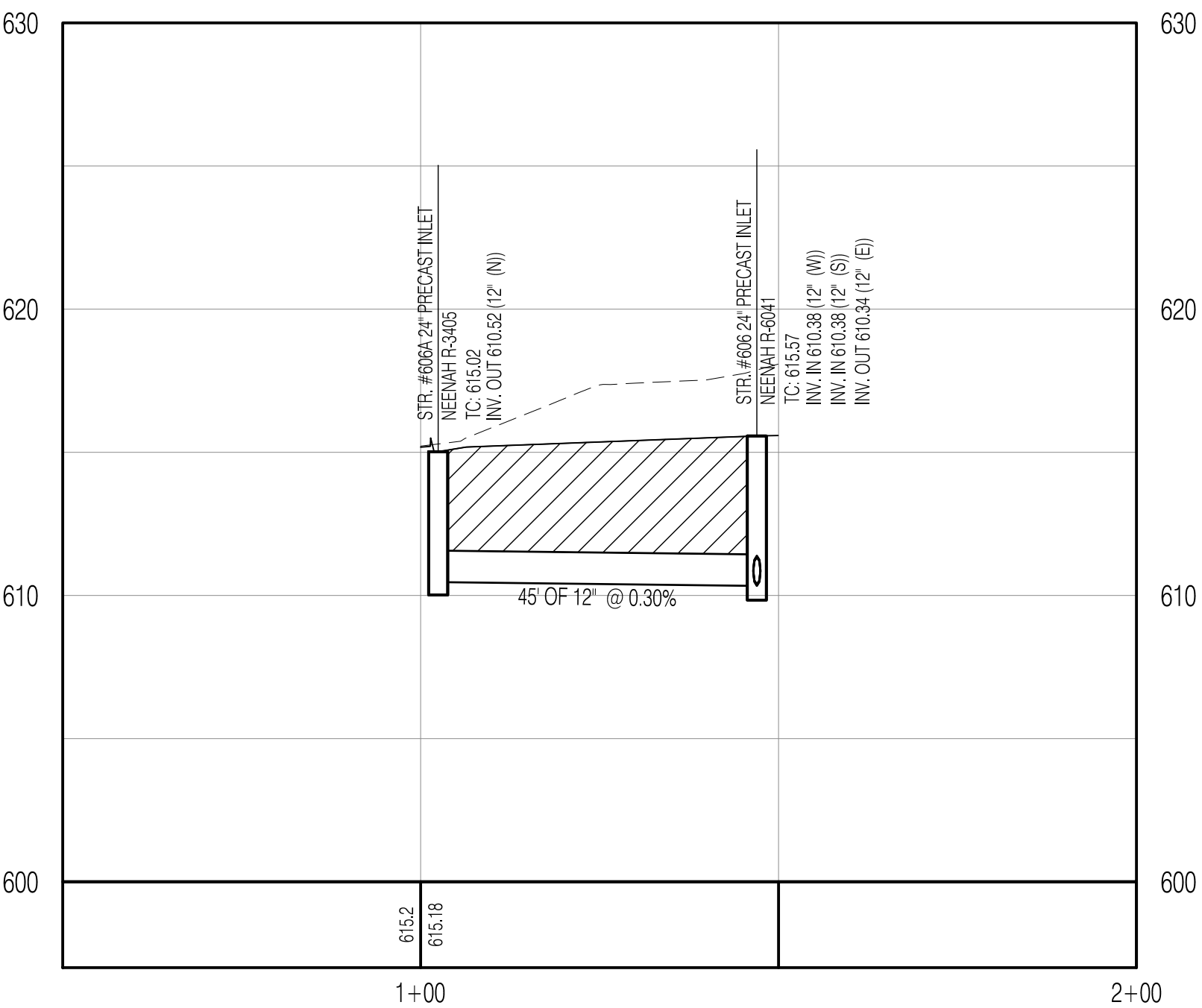
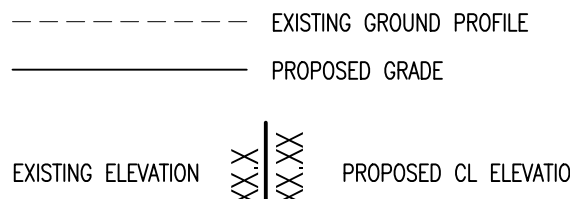


LEGEND:

- RIGHT OF WAY LINE (EXISTING R/W)
- EASEMENT LINE
- CENTER LINE
- RIGHT OF WAY LINE (NEW R/W)
- LOT LINE
- PARKING STRIP
- WATER MAIN
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- SANITARY SEWER SHALL BE 8" PVC, SDR 35.



STORM PROFILE

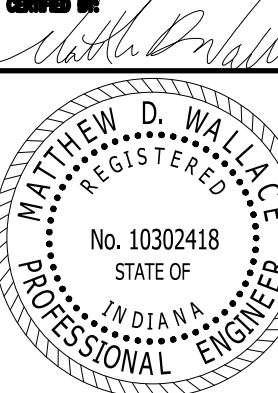
Scale: 1" = 20'-0"



3839 PRIORITY WAY SOUTH DRIVE
SUITE 200
INDIANAPOLIS, INDIANA 46240
Phone (317) 844-6777
E-Mail cripe@crpe-bc
CRPE-B.C. CONSULTING
SURVEY - 3D LASER SCANNING
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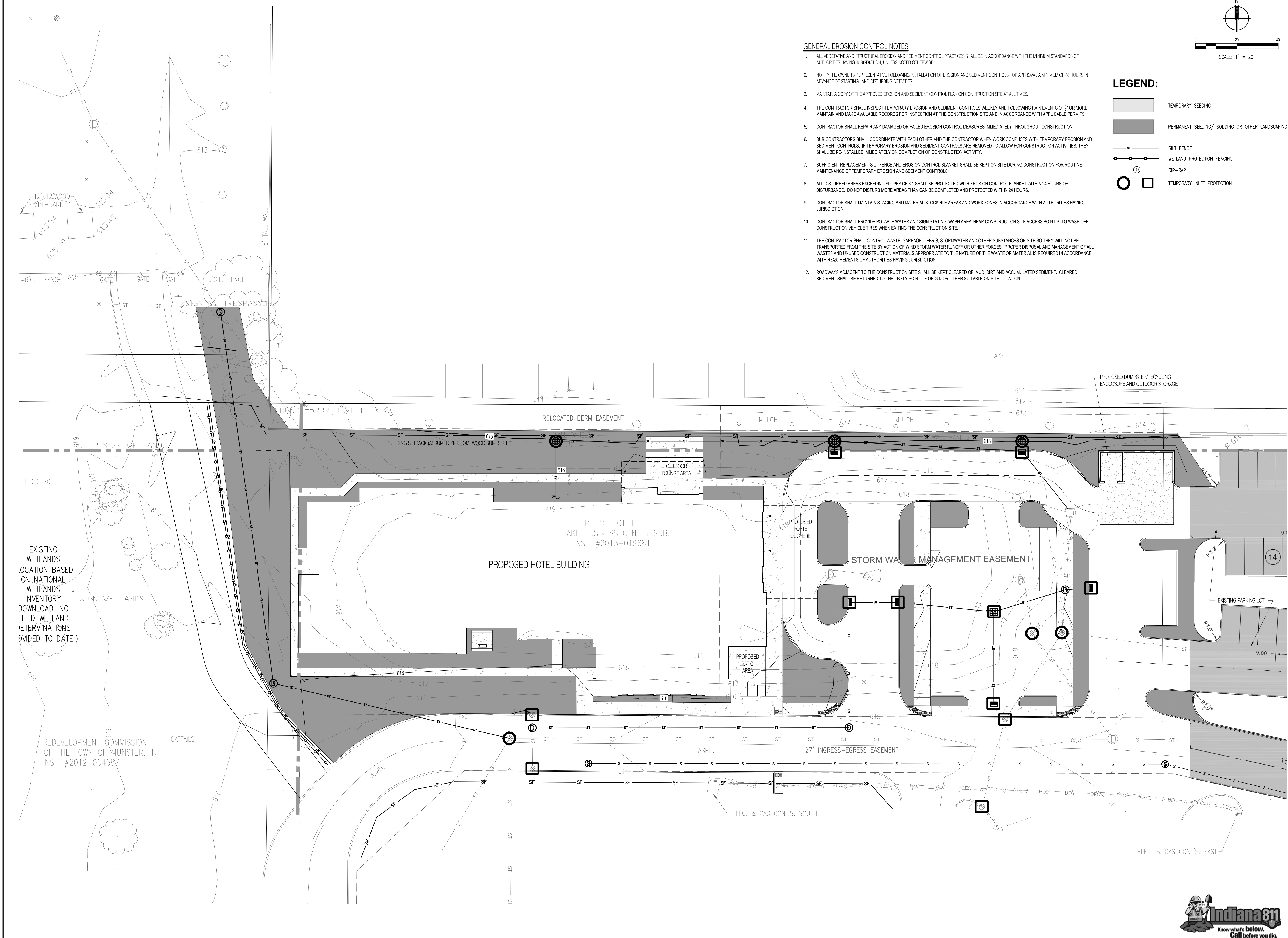


STORM PLAN AND PROFILE
GENERAL HOTELS CORPORATION
HOME2 SUITES BY HILTON
MUNSTER, IN



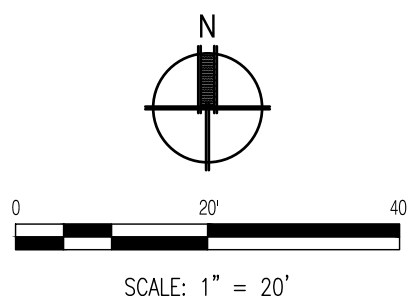
Drawn By
RDR
Checked By
MDW
City
BK
As indicated

C504
7/22/2021
Project Number
0190149-10000



GENERAL EROSION CONTROL NOTES

1. ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE IN ACCORDANCE WITH THE MINIMUM STANDARDS OF AUTHORITIES HAVING JURISDICTION, UNLESS NOTED OTHERWISE.
2. NOTIFY THE OWNER'S REPRESENTATIVE FOLLOWING INSTALLATION OF EROSION AND SEDIMENT CONTROLS FOR APPROVAL A MINIMUM OF 48 HOURS IN ADVANCE OF STARTING LAND DISTURBING ACTIVITIES.
3. MAINTAIN A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN ON CONSTRUCTION SITE AT ALL TIMES.
4. THE CONTRACTOR SHALL INSPECT TEMPORARY EROSION AND SEDIMENT CONTROLS WEEKLY AND FOLLOWING RAIN EVENTS OF 1/2" OR MORE. MAINTAIN AND MAKE AVAILABLE RECORDS FOR INSPECTION AT THE CONSTRUCTION SITE AND IN ACCORDANCE WITH APPLICABLE PERMITS.
5. CONTRACTOR SHALL REPAIR ANY DAMAGED OR FAILED EROSION CONTROL MEASURES IMMEDIATELY THROUGHOUT CONSTRUCTION.
6. SUB-CONTRACTORS SHALL COORDINATE WITH EACH OTHER AND THE CONTRACTOR WHEN WORK CONFLICTS WITH TEMPORARY EROSION AND SEDIMENT CONTROLS. IF TEMPORARY EROSION AND SEDIMENT CONTROLS ARE REMOVED TO ALLOW FOR CONSTRUCTION ACTIVITIES, THEY SHALL BE RE-INSTALLED IMMEDIATELY ON COMPLETION OF CONSTRUCTION ACTIVITY.
7. SUFFICIENT REPLACEMENT SILT FENCE AND EROSION CONTROL BLANKET SHALL BE KEPT ON SITE DURING CONSTRUCTION FOR ROUTINE MAINTENANCE OF TEMPORARY EROSION AND SEDIMENT CONTROLS.
8. ALL DISTURBED AREAS EXCEEDING SLOPES OF 6:1 SHALL BE PROTECTED WITH EROSION CONTROL BLANKET WITHIN 24 HOURS OF DISTURBANCE. DO NOT DISTURB MORE AREAS THAN CAN BE COMPLETED AND PROTECTED WITHIN 24 HOURS.
9. CONTRACTOR SHALL MAINTAIN STAGING AND MATERIAL STOCKPILE AREAS AND WORK ZONES IN ACCORDANCE WITH AUTHORITIES HAVING JURISDICTION.
10. CONTRACTOR SHALL PROVIDE POTABLE WATER AND SIGN STATING 'WASH AREA' NEAR CONSTRUCTION SITE ACCESS POINT(S) TO WASH OFF CONSTRUCTION VEHICLE TIRES WHEN EXITING THE CONSTRUCTION SITE.
11. THE CONTRACTOR SHALL CONTROL WASTE, GARBAGE, DEBRIS, STORMWATER AND OTHER SUBSTANCES ON SITE SO THEY WILL NOT BE TRANSPORTED FROM THE SITE BY ACTION OF WIND STORM WATER RUNOFF OR OTHER FORCES. PROPER DISPOSAL AND MANAGEMENT OF ALL WASTES AND UNUSED CONSTRUCTION MATERIALS APPROPRIATE TO THE NATURE OF THE WASTE OR MATERIAL IS REQUIRED IN ACCORDANCE WITH REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
12. ROADWAYS ADJACENT TO THE CONSTRUCTION SITE SHALL BE KEPT CLEARED OF MUD, DIRT AND ACCUMULATED SEDIMENT. CLEARED SEDIMENT SHALL BE RETURNED TO THE LIKELY POINT OF ORIGIN OR OTHER SUITABLE ON-SITE LOCATION.



LEGEND:

- TEMPORARY SEEDING
- PERMANENT SEEDING/ SODDING OR OTHER LANDSCAPING
- SILT FENCE
- WETLAND PROTECTION FENCING
- RIP-RAP
- TEMPORARY INLET PROTECTION

REVISION NUMBER

REVISION DATE

REVISION DESCRIPTION

CONSULTANTS

721 SHADELAND STATION, INDIANAPOLIS, IN 46204
P: 317.641.4799 F: 317.641.4790
shrewsberry.com

3839 PRIORITY WAY SOUTH DRIVE
SUITE 200
INDIANAPOLIS, INDIANA 46240
Phone: (317) 844-6777
E-Mail: cripe@cripe.biz

SOLUTIONS BY DESIGN SINCE 1937

STORMWATER POLLUTION PREVENTION PLAN

GENERAL HOTELS CORPORATION

HOME2 SUITES BY HILTON

MUNSTER, IN

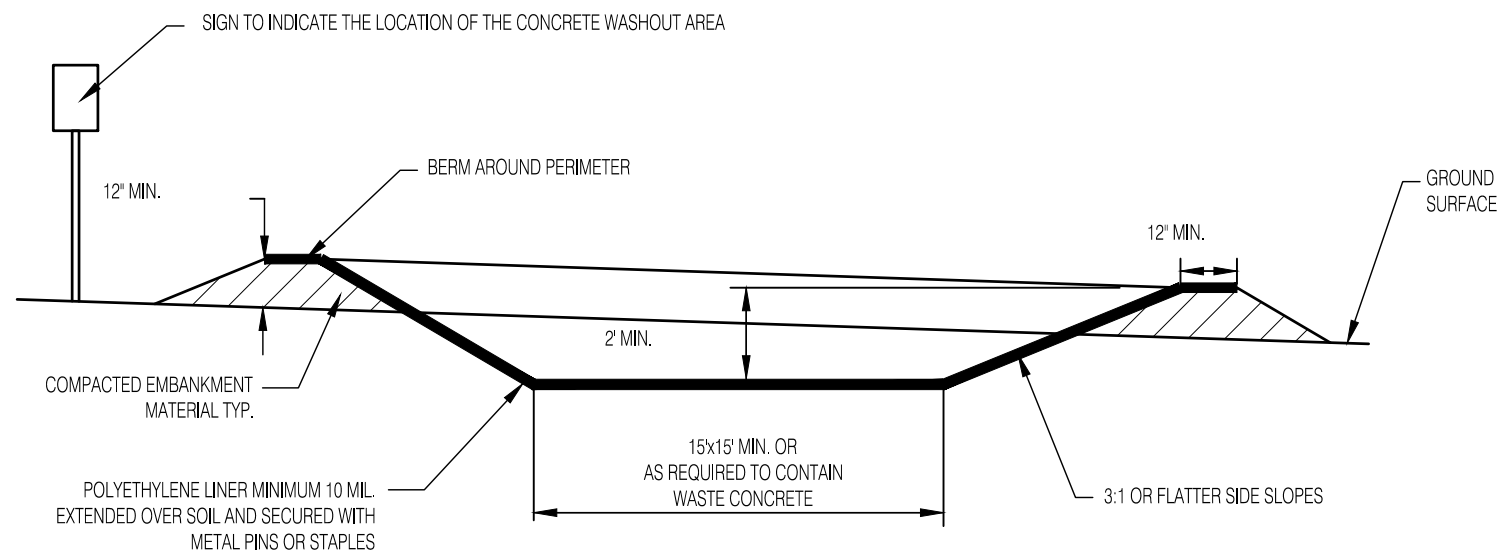
Drawn By: RDR
Checked By: MDW
City: BK
As indicated

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C601

7/22/2021

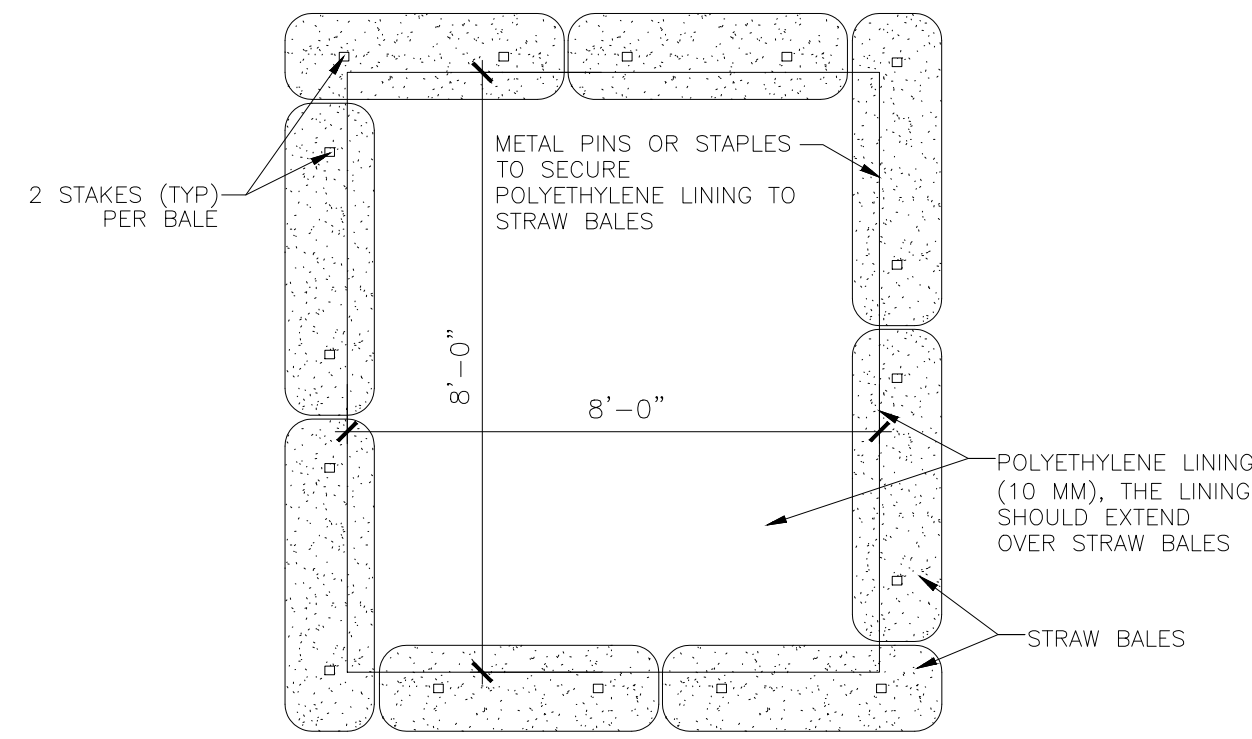
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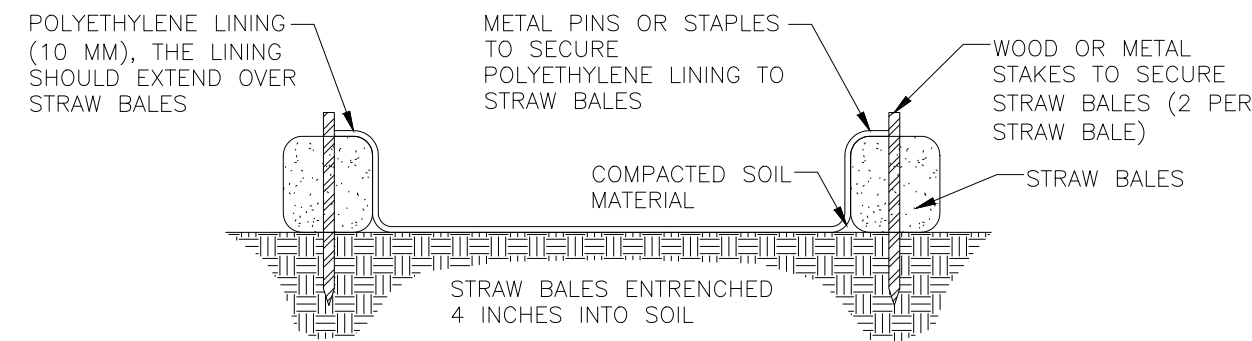
- NOTE:
1. CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
 2. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT AREA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
 3. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTE CONCRETE.
 4. AT THE END OF CONSTRUCTION ALL CONCRETE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT AN APPROVED WASTE SITE.
 5. WHEN THE CONCRETE WASHOUT AREA IS REMOVED, THE DISTURBED AREA SHALL BE SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY ENGINEER.
 6. THE CONCRETE WASHOUT AREA SHALL BE LINED WITH A POLYETHYLENE LINER TO PREVENT SEEPAGE INTO SUBSURFACE SOILS.

CONCRETE WASHOUT AREA DETAIL

SCALE: NONE



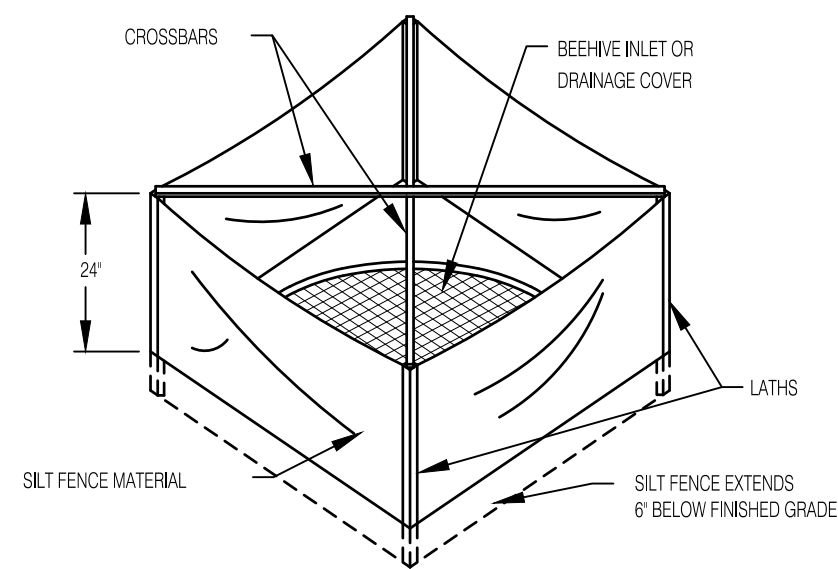
PLAN



SECTION

CONCRETE WASHOUT

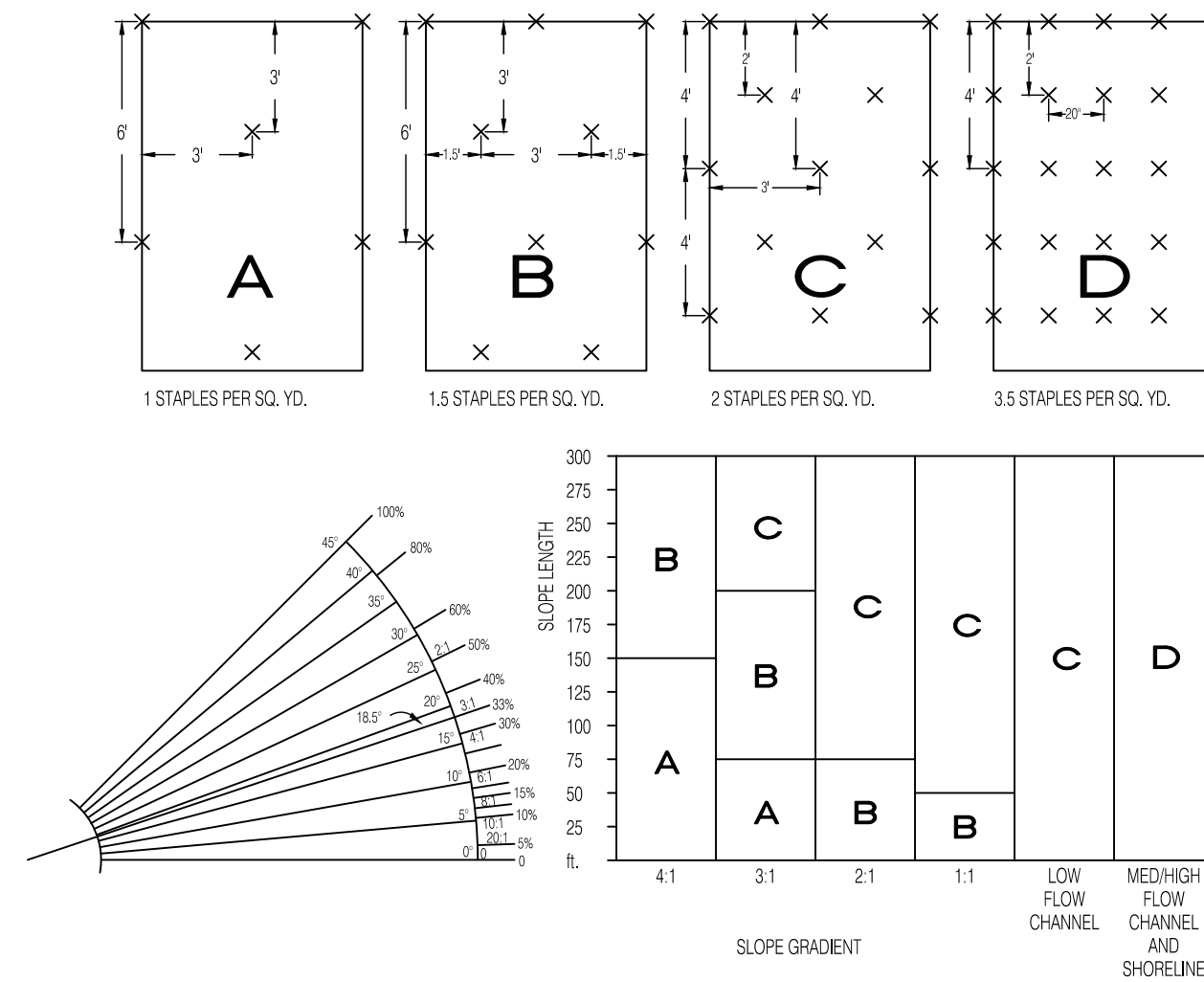
NO SCALE



- NOTE:
1. SEE SILT FENCE DETAIL FOR MATERIAL SPECIFICATIONS.
 2. SILT FENCE SHALL BE PREASSEMBLED BY SUPPLIER.

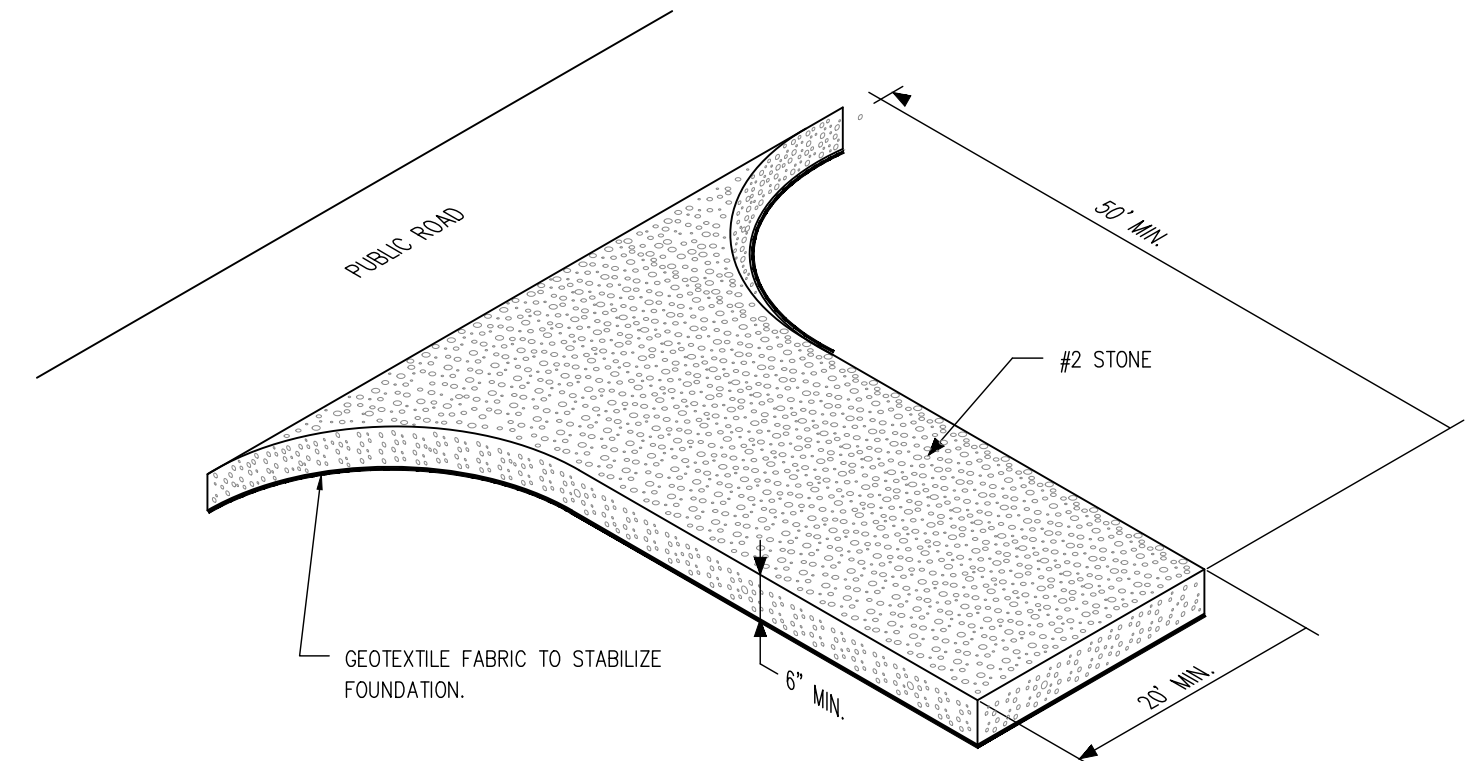
INLET PROTECTION – SILT FENCE

SCALE: NONE



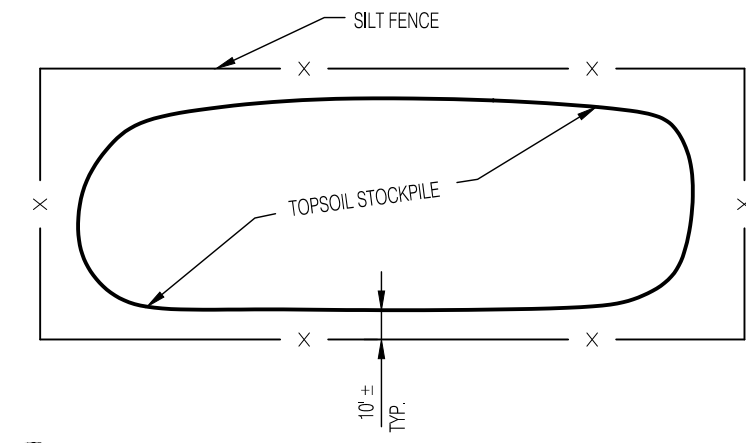
STAPLE PATTERN GUIDE

NO SCALE



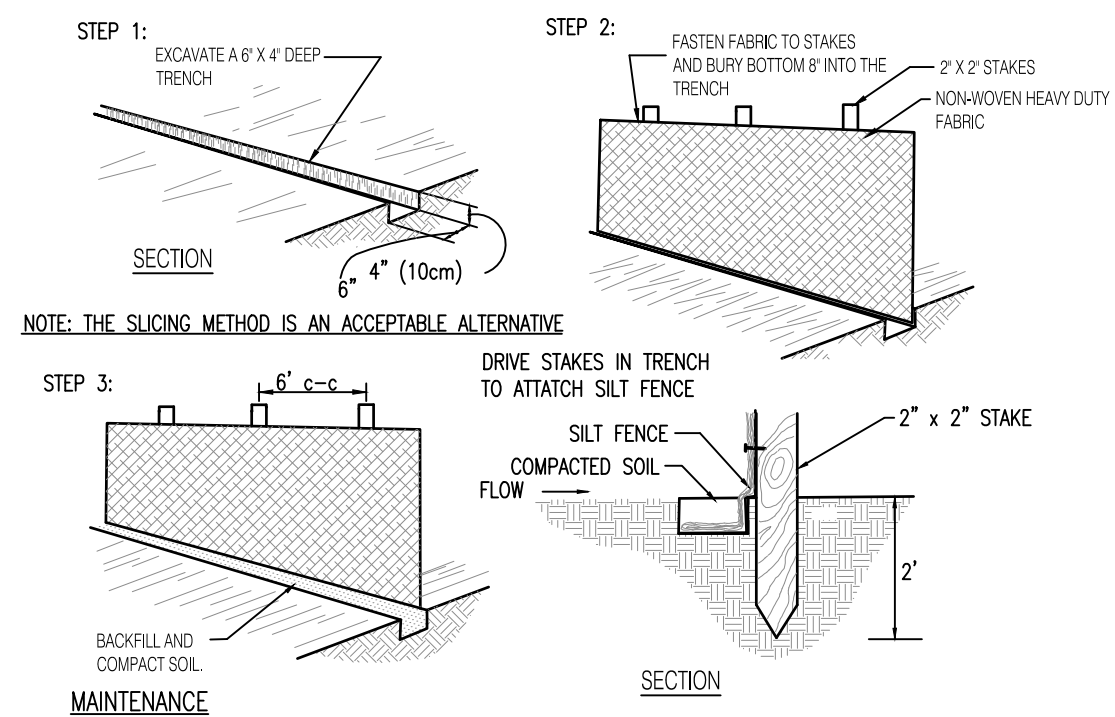
TEMPORARY CONSTRUCTION ENTRANCE

NO SCALE



TOPSOIL STOCKPILE

NO SCALE



- NOTE: THE SLICING METHOD IS AN ACCEPTABLE ALTERNATIVE
1. INSPECT THE SILT FENCE PERIODICALLY AND AFTER EACH STORM EVENT.
 2. IF FENCE FABRIC TEARS, STARTS TO DECOMPOSE, OR IN ANY WAY BECOMES INEFFECTIVE, REPLACE THE AFFECTED PORTION IMMEDIATELY.
 3. REMOVE DEPOSITED SEDIMENT WHEN IT REACHES HALF THE HEIGHT OF THE FENCE AT ITS LOWEST POINT OR IS CAUSING THE FABRIC TO BULGE.
 4. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEAN OUT.
 5. AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED, REMOVE THE FENCE AND SEDIMENT DEPOSITS, BRING THE DISTURBED AREA TO GRADE, AND STABILIZE.

SILT FENCE BARRIER INSTALLATION

NO SCALE



REVISION NUMBER | REVISION DATE | REVISION DESCRIPTION

CONSULTANTS



7321 SHADELAND STATION, INDIANAPOLIS IN 46256
(317) 841-4777 | (317) 841-4780
shrewsberry.com

3839 PRIORITY WAY SOUTH DRIVE
SUITE 200
INDIANAPOLIS, INDIANA 46240
Phone (317) 844-6777
E-Mail: cripe@cripe.biz
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STORMWATER POLLUTION PREVENTION DETAILS
GENERAL HOTELS CORPORATION
HOME2 SUITES BY HILTON
MUNSTER, IN

DESIGNED BY
Matthew D. Wallace



Drawn By: RDR
Checked By: MDW
By: BK
As indicated

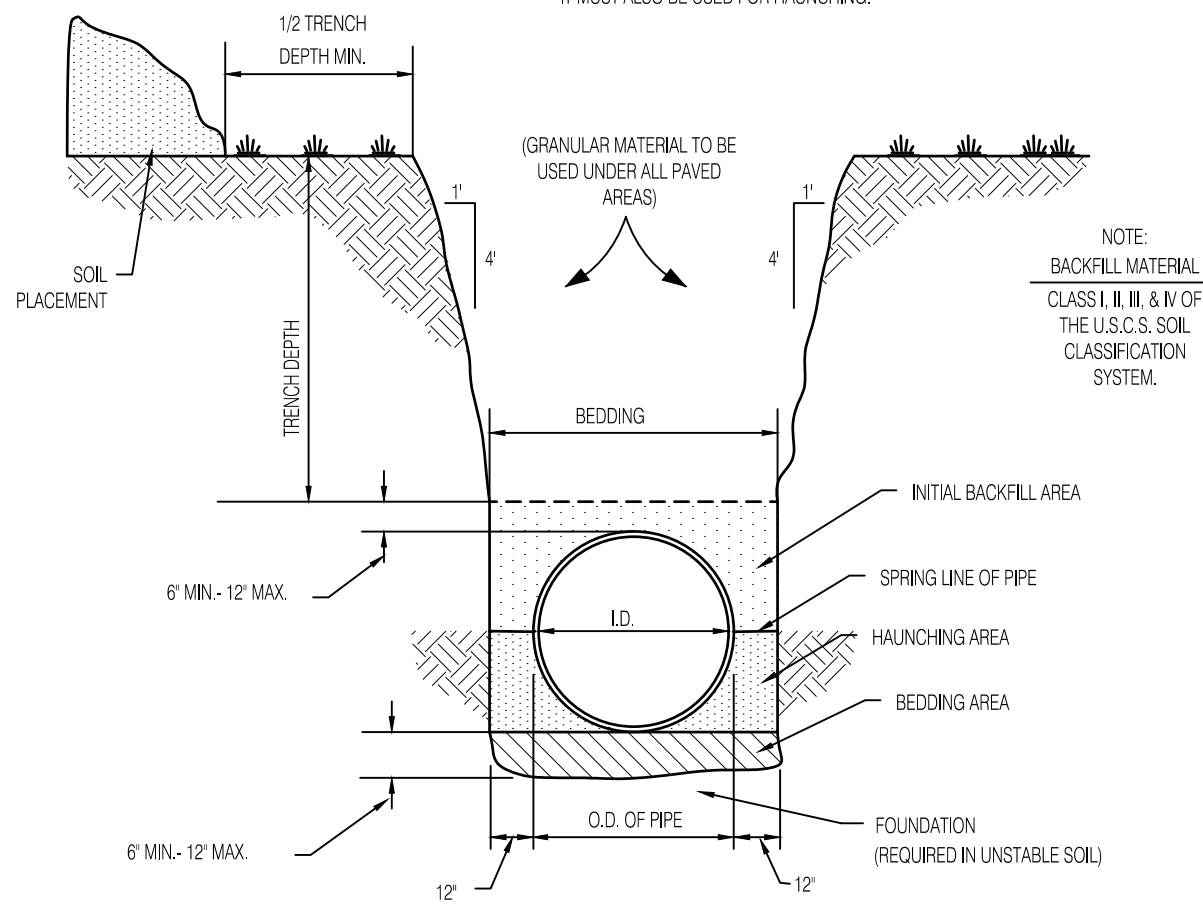
C602

Date: 7/22/2021

Project Number: 0190149-10000

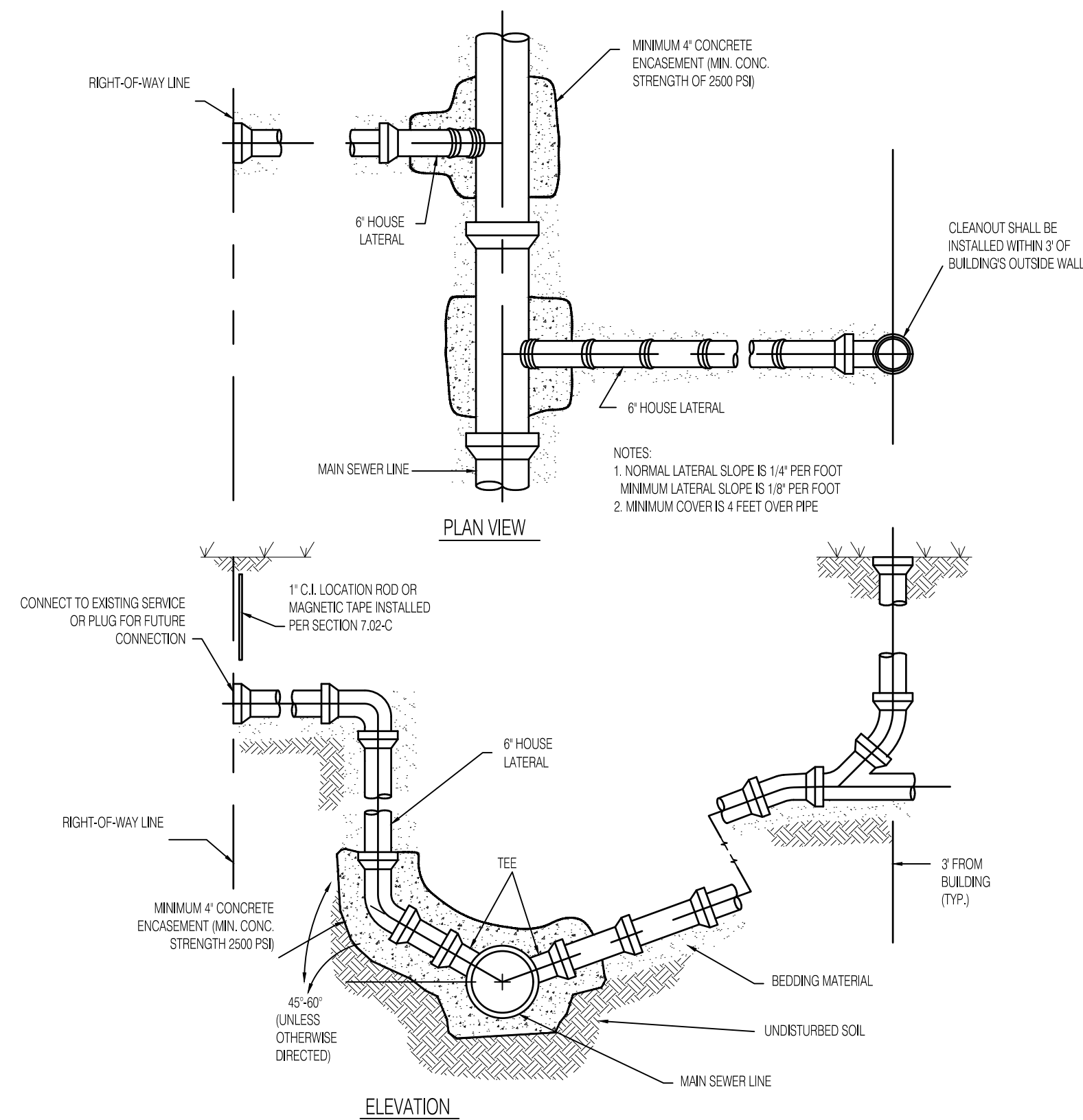
| REQUIRED COMPACTION TABLE % STANDARD PROCTOR DENSITY (ASTM D 2922) BACKFILL MATERIAL - (SEE NOTE) | | | | |
|---|---------------|----------|-----------|--------------------|
| TRENCH AREA | CLASS I | CLASS II | CLASS III | CLASS IV |
| BEDDING | FLAT SHOVEL | 85% | 90% | UNDISTURBED BOTTOM |
| HAUNCH | | 85% | 90% | NO |
| INITIAL BACKFILL | NO COMPACTION | 85% | 90% | NO |

NOTE: IF CLASS I MATERIAL IS USED FOR BEDDING, IT MUST ALSO BE USED FOR HAUNCHING.



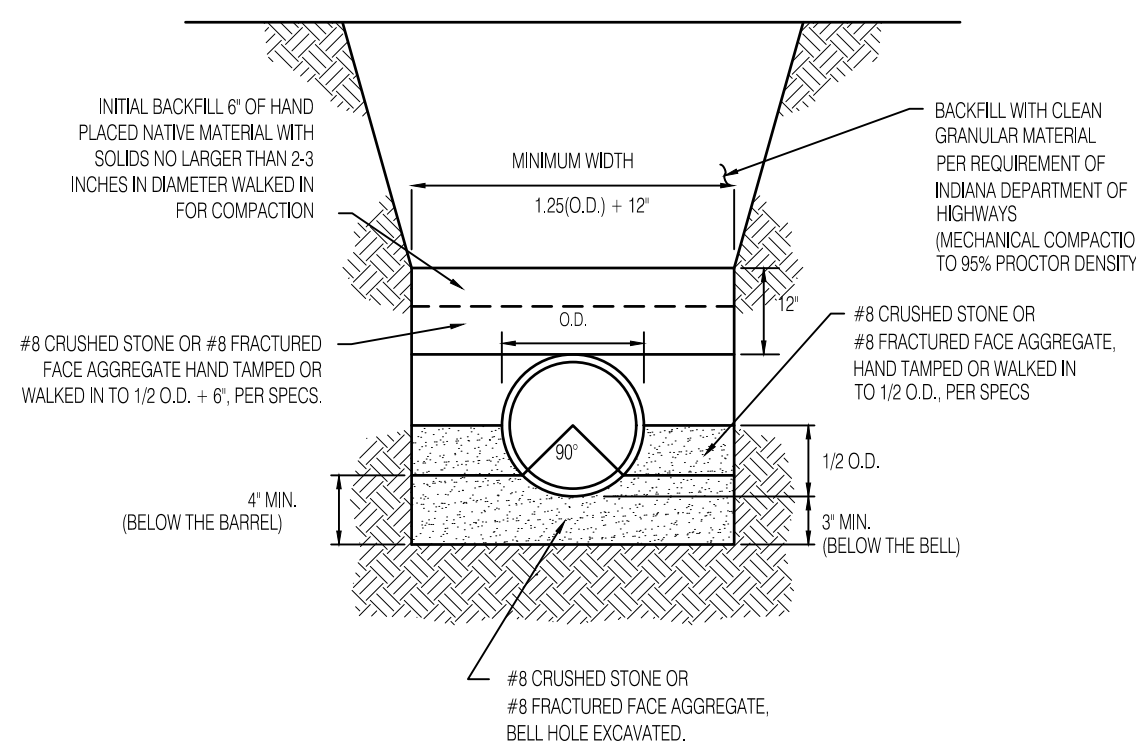
STORM SEWER TRENCH & PIPE EMBEDMENT DETAIL FOR RCP PIPE

SCALE: NONE



SERVICE CONNECTION DEEP SEWERS

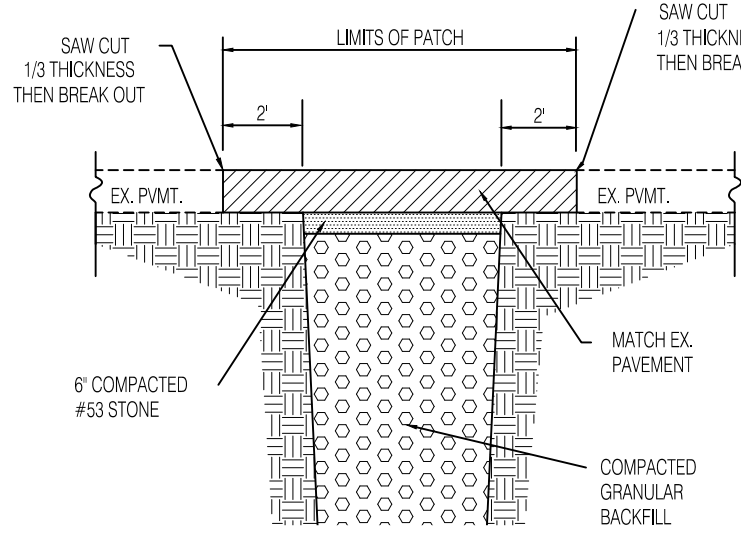
SCALE: NONE



| PIPE SIZE | 8" TO 15" | 18" & OVER |
|-------------------------------|--------------------|--------------------|
| BEDDING BELOW THE PIPE BARREL | O.D./4 MIN = 4" | O.D./4 MAX = 8" |

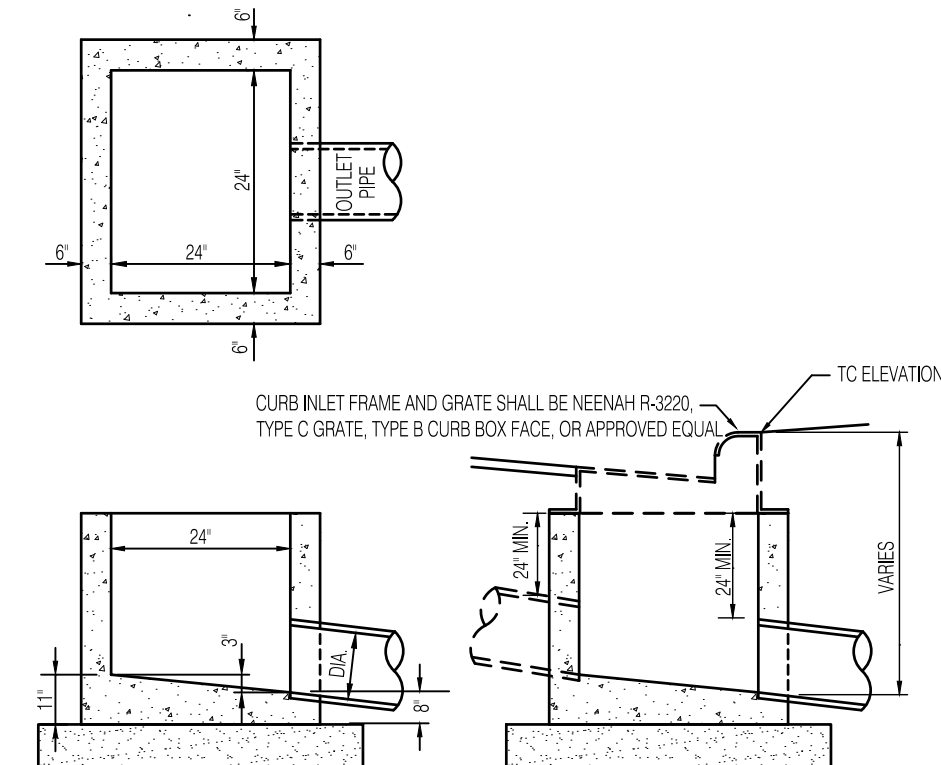
BEDDING DETAIL - PVC/HDPE

SCALE: NONE



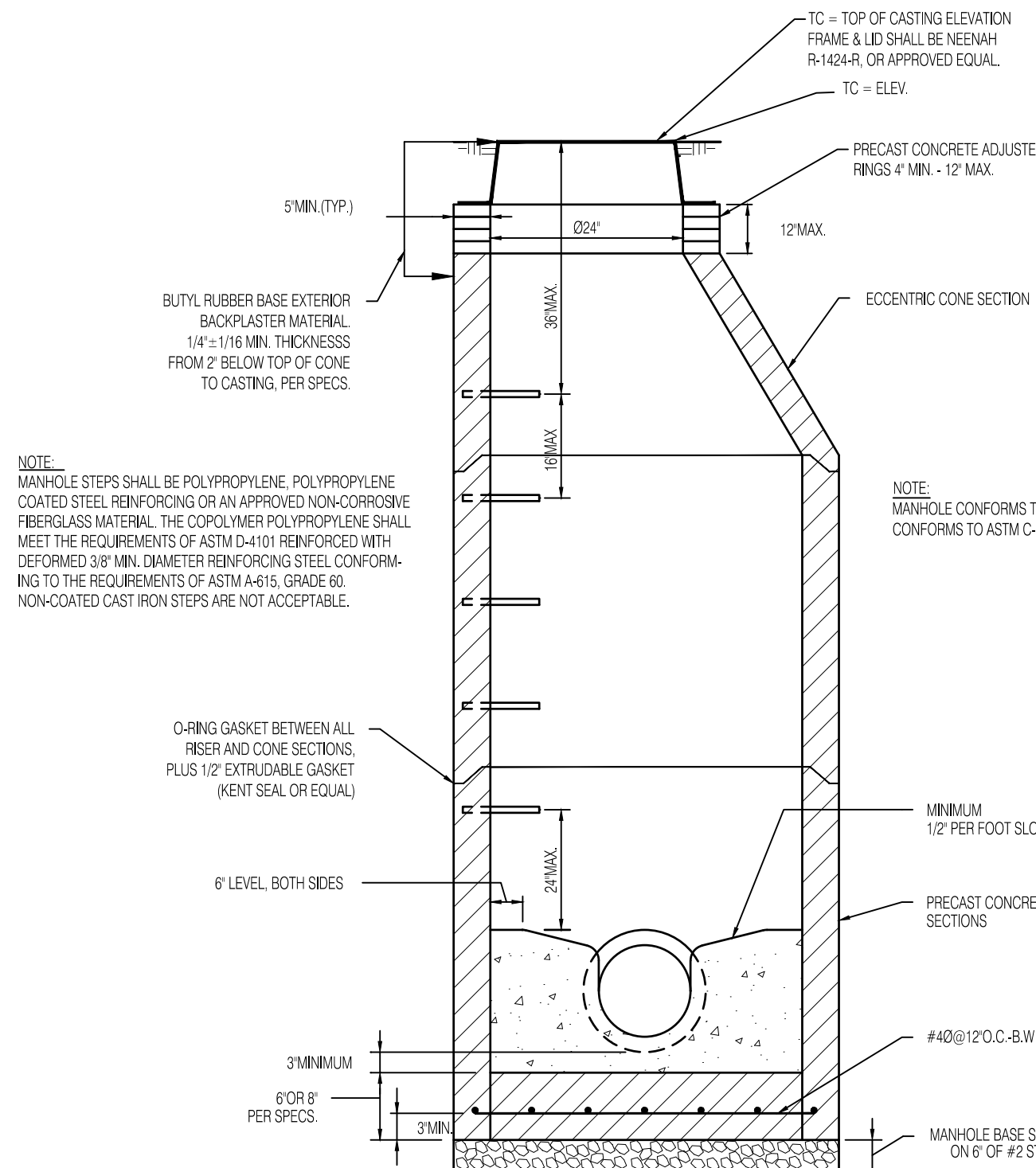
GENERAL PAVEMENT REPAIR DETAIL

SCALE: NONE



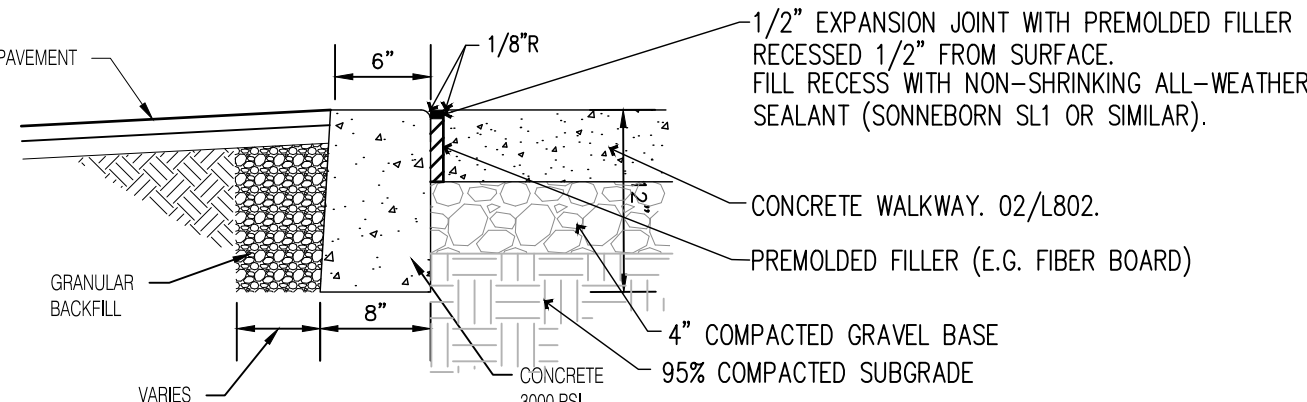
24" PRECAST INLET DETAIL

SCALE: NONE



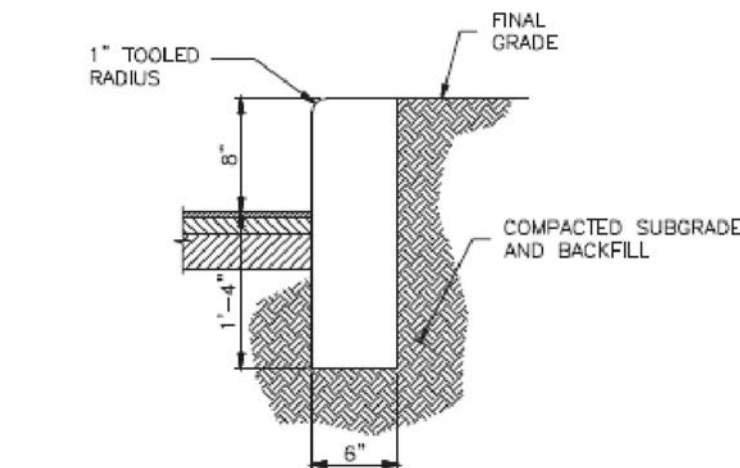
PIPES 8"-24" STANDARD MANHOLE

SCALE: NONE



FLUSH CONCRETE CURB DETAIL

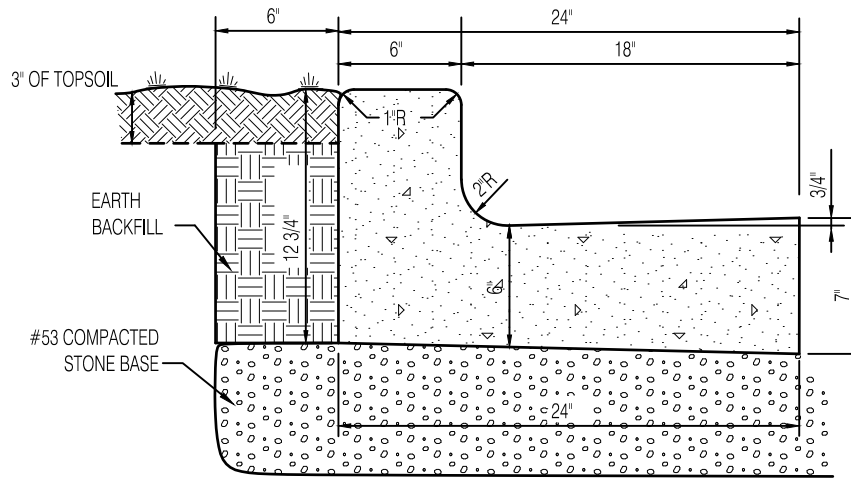
SCALE: NONE



STRAIGHT CONCRETE CURB

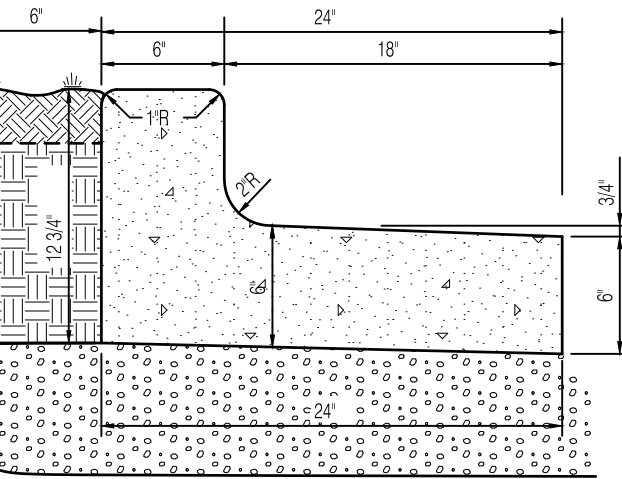
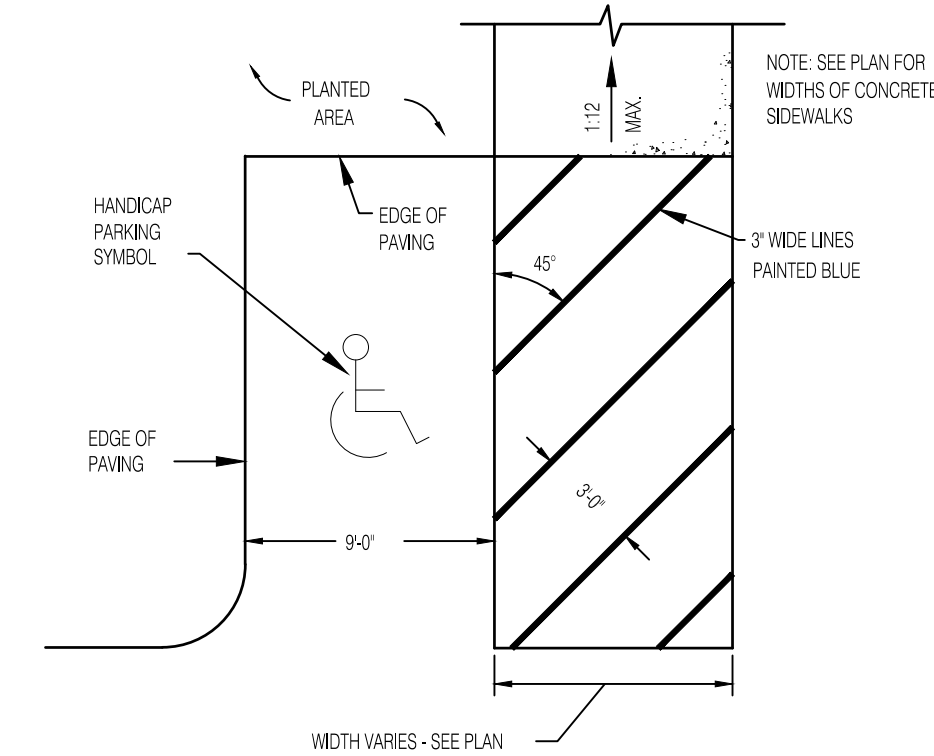
NO SCALE

NOTES:
1. CURB SHALL HAVE 1/2" EXPANSION JOINTS AT 80'-0" MAX SPACING AND AT ENDS OF RADIAL CONTROL JOINTS SHALL BE PLACED AT 10' MAX. SPACING.



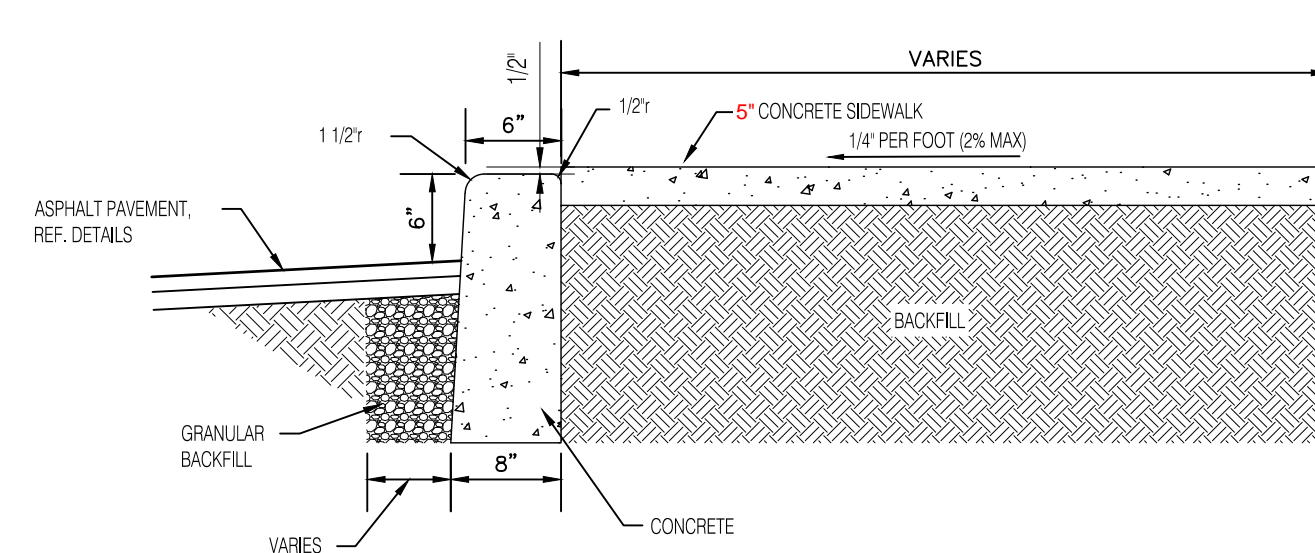
2' CONCRETE CHAIRBACK CURB (WITH GUTTER)

SCALE: NONE



2' CONCRETE CHAIRBACK CURB (WITHOUT GUTTER)

SCALE: NONE

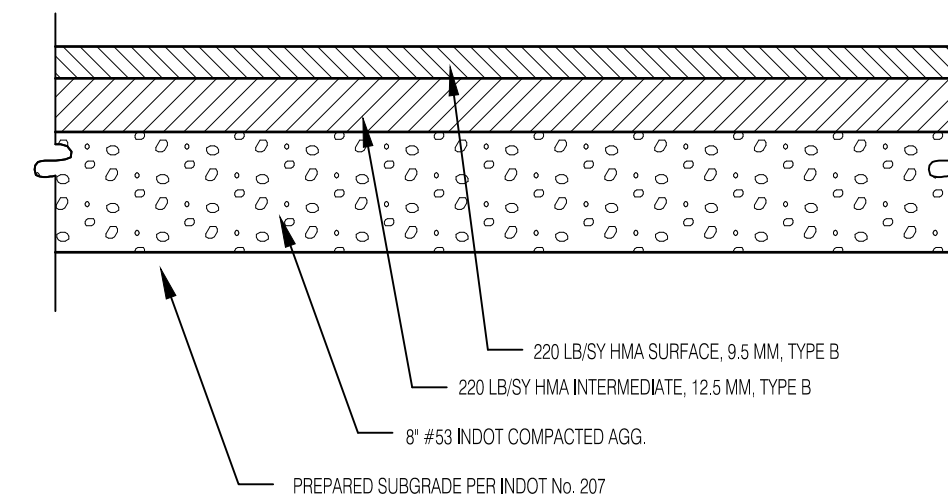


6" STRAIGHT CURB AND WALK

SCALE: NONE

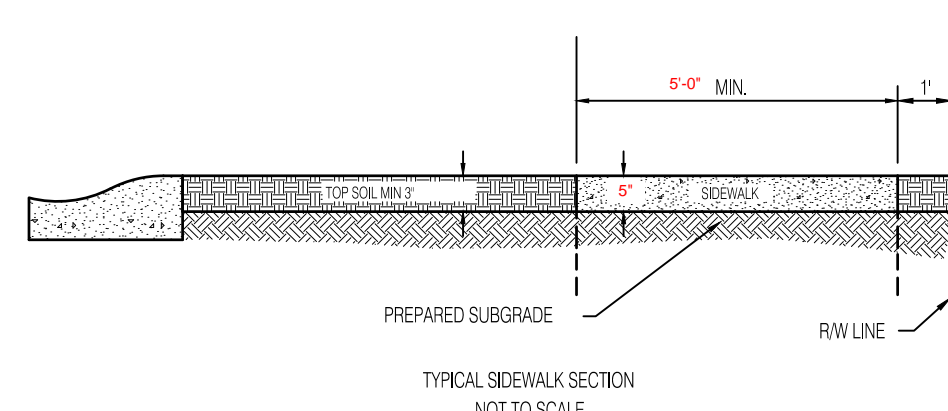
HANDICAPPED PARKING SPACE & STRIPPING

NO SCALE



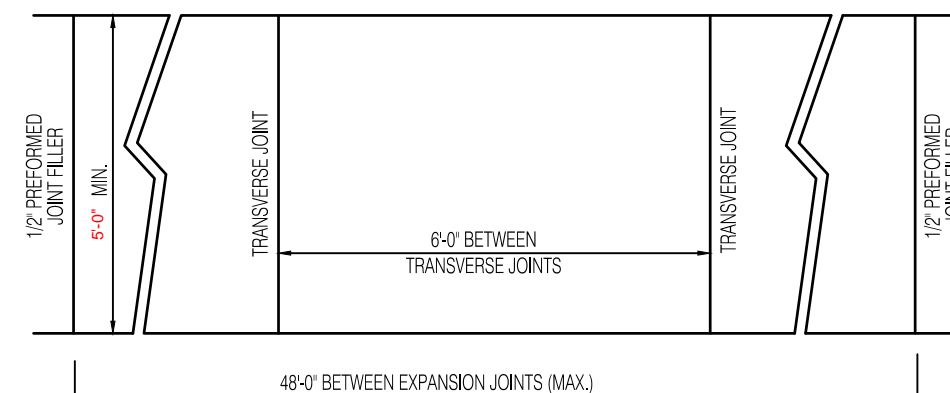
LIGHT DUTY PAVEMENT SECTION

SCALE: NONE



NOT TO SCALE

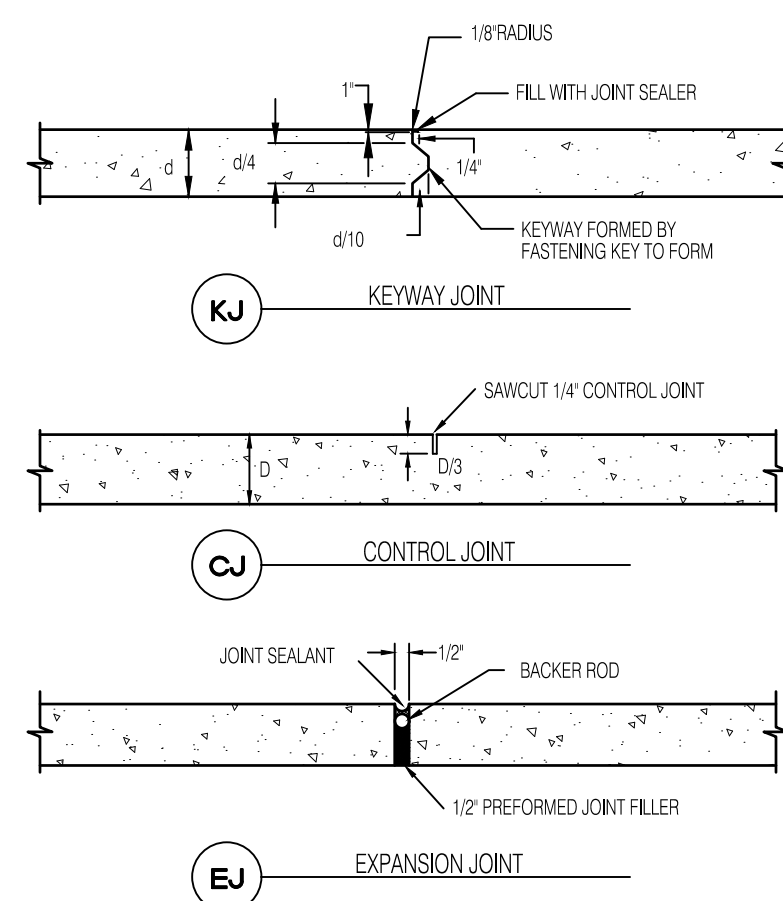
THE SPACE BEHIND THE CURB SHALL BE FILLED WITH SUITABLE MATERIAL TO THE REQUIRED ELEVATION AND COMPACTED IN LAYERS NOT TO EXCEED 6 IN DEPTH. SUBGRADE UNDER ALL CURBS, SIDEWALK, AND DRIVES SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 207.02 OF THE STANDARD SPECIFICATIONS.



NOT TO SCALE

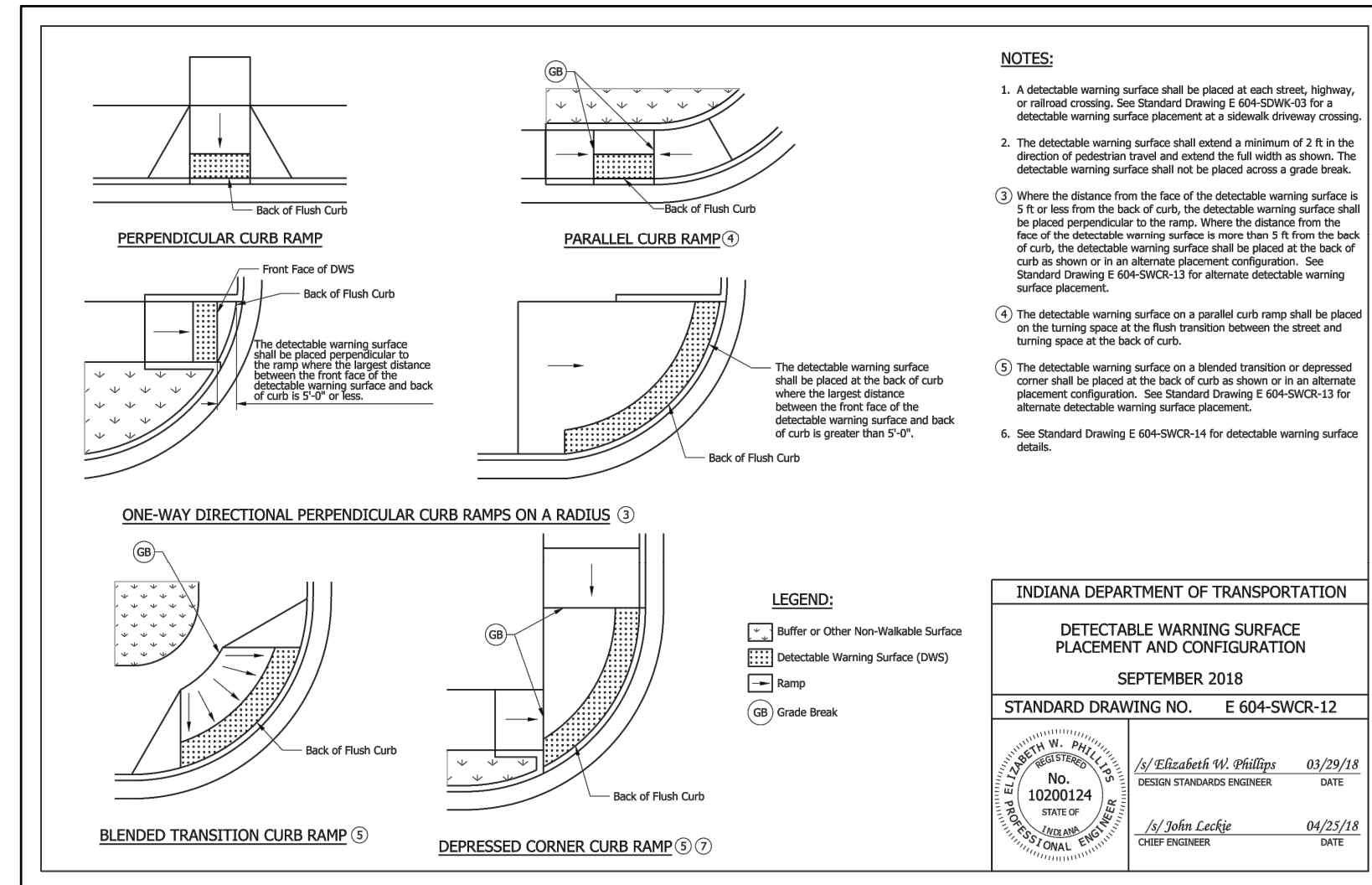
SIDEWALK DETAIL

SCALE: NONE



CONCRETE JOINT DETAILS

SCALE: NONE

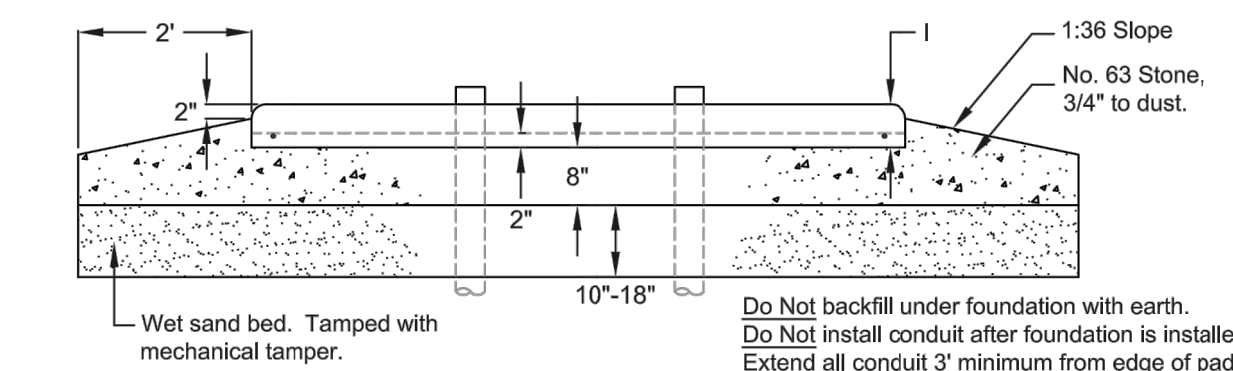
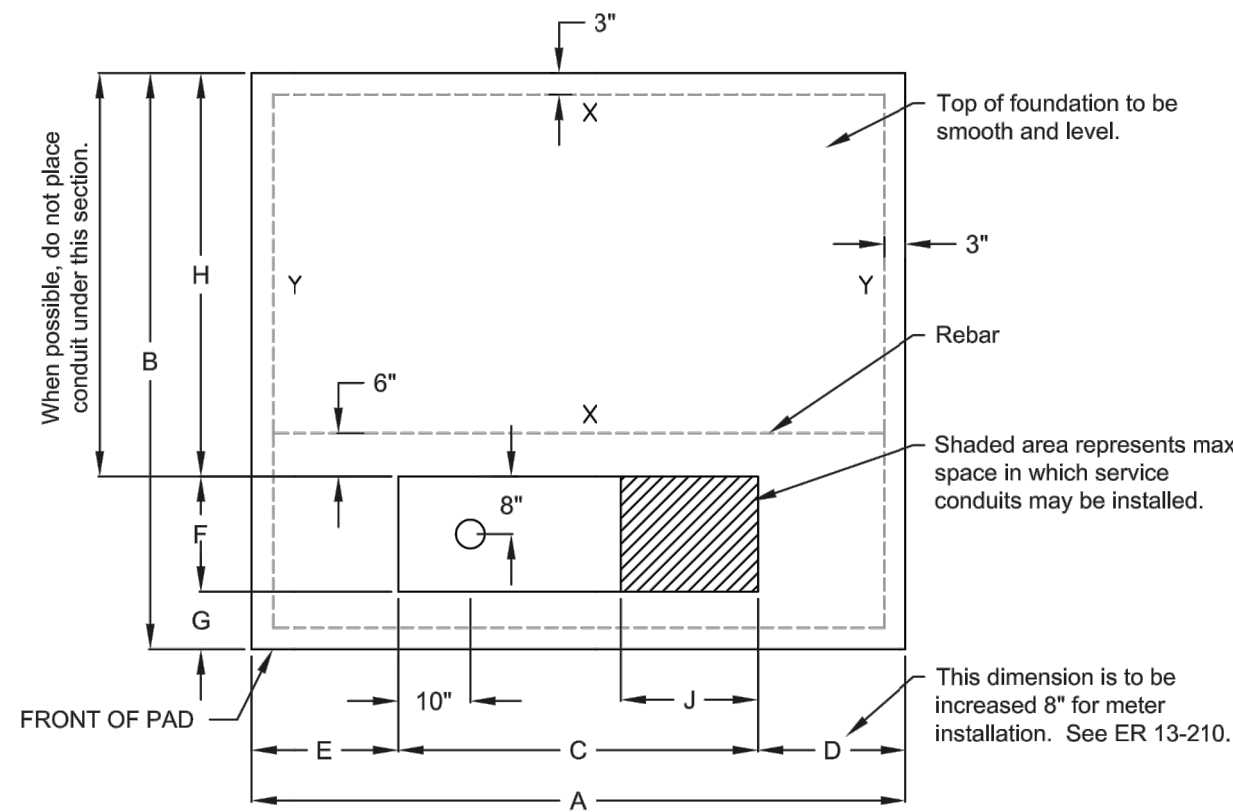


TRANSFORMER INSTALLATION 3 Phase, Loop or Radial Outdoor



4. FOUNDATION DETAIL:

- 4.1. CONCRETE PAD FOUNDATION DETAILS:
4.1.1. Depth of conduit burial to be minimum 3 feet. Increase depth to 4 feet if trench contains gas
4.1.2. Elbow size to be minimum of 36" radius. Increase radius to 48" if trench contains gas.



DENOTES REVISION

NORTHERN INDIANA PUBLIC SERVICE COMPANY



TRANSFORMER INSTALLATION 3 Phase, Loop or Radial Outdoor

4.2 FOUNDATION DETAIL DIMENSIONS: 4.2.1 Concrete Foundation Reinforcing Bar List:

| Pad Number | X (w/ metering) | X (w/o metering) | Y | Deformed Bar | Rod Shape |
|------------|-----------------|------------------|--------|--------------|-----------|
| Quantity | Length | Quantity | Length | Quantity | Length |
| 1 | 91" | 83" | 54" | 3 | |
| 2 | 91" | 83" | 74" | | |
| 3 | 132" | 124" | 87" | 4 | STRAIGHT |
| 4 | 132" | 124" | 100" | | |
| 5 | 132" | 124" | 110" | | |

4.2.2 Concrete Foundation Dimensioning:

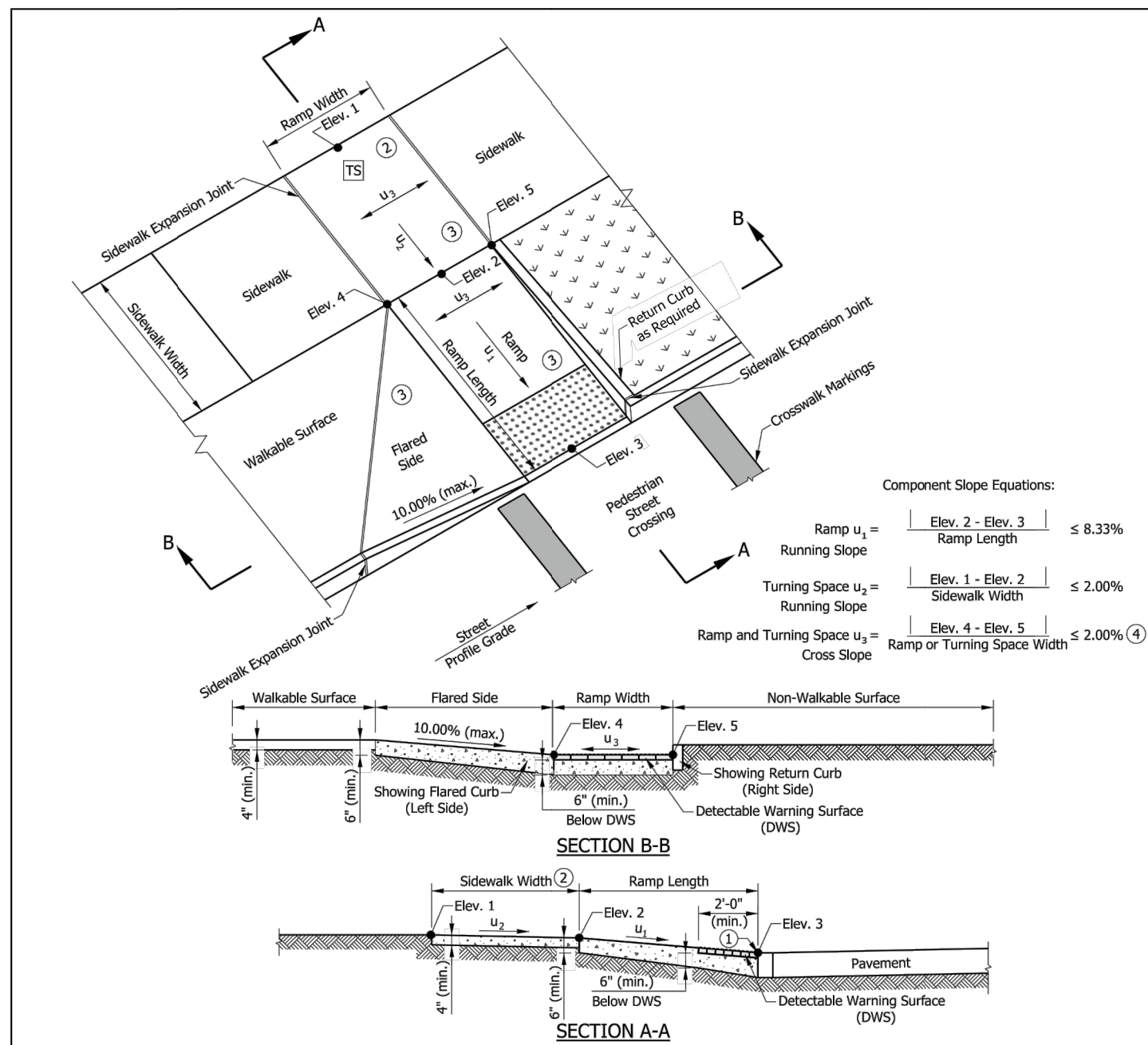
| Pad Number | Entrance Voltage | | | Dimensions (Inches) | | | | | | | | | | Volume of Concrete** (Cu. Yds.) | Maximum Trans. Weight (lbs) |
|---------------|---------------------------------|----------------------|----------------------------|---------------------|-----|----|------|------|----|---|----|---|----|---------------------------------------|--------------------------------------|
| | 208Y/120 | 480Y/277 480 | TRANS. (kVA) | | | | | | | | | | | | |
| | Entrance Amps | | | A* | B | C | D* | E | F | G | H | I | J | | |
| 1 | 100, 200 300, 400 600 | 100 200 | 75 150 | 89 | 60 | 45 | 22 | 22 | 15 | 8 | 37 | 6 | 16 | 0.59 | 5300 |
| 2 | 800, 1000 1200, 1600 2000 | 300, 400 600, 800 | 75, 150 225, 300 500 | 91 | 80 | 50 | 20.5 | 20.5 | 16 | 8 | 56 | 6 | 19 | 0.83 | 7000 |
| 3 | 2400, 3000 3600, 4000 | 1000 1200 1600 | 300, 500 750, 1000 | 130 | 93 | 50 | 40 | 40 | 16 | 8 | 69 | 6 | 19 | 1.45 | 11000 |
| 4 | - | 2000 2400 | 750 1000 1500 | 130 | 106 | 57 | 36.5 | 36.5 | 16 | 8 | 82 | 8 | 22 | 2.2 | 13485 |
| 5 | - | 3000 3600 4000 | 1000, 1500 2000, 2500 | 130 | 116 | 58 | 36 | 36 | 16 | 8 | 92 | 8 | 22 | 2.43 | 18000 |

* Increase dimension by 8" for meter installation. See ER 13-210.

** Cubic yards does not include extra volume for meter installation. See ER 13-210.

DENOTES REVISION

NORTHERN INDIANA PUBLIC SERVICE COMPANY



NOTES:

- The bottom edge of the ramp and top of curb shall be flush with the edge of adjacent pavement and gutter line.
- The turning space shall have a minimum clear dimension of 4 ft x 4 ft. Where the turning space is constrained at the back of the sidewalk, the minimum clear dimension shall be 4 ft x 5 ft, with the 5-ft dimension in the direction of the ramp running slope. Where a tiered perpendicular curb ramp is used, a constrained turning space shall have a minimum clear dimension of 5 ft x 5 ft.
- Curb ramp surface shall be coarse broomed transverse to the running slope.
- See Standard Drawing E 604-SWCR-01 for cross slope exceptions.
- See Standard Drawing E 604-SWCR-12, -13, and -14 for Detectable Warning Surface placement, configuration, and details.
- See Standard Drawing E 604-CCS3-01 for sidewalk expansion joint details.

LEGEND:

- Buffer or Other Non-Walkable Surface
- Ramp
- Detectable Warning Surface
- Turning Space

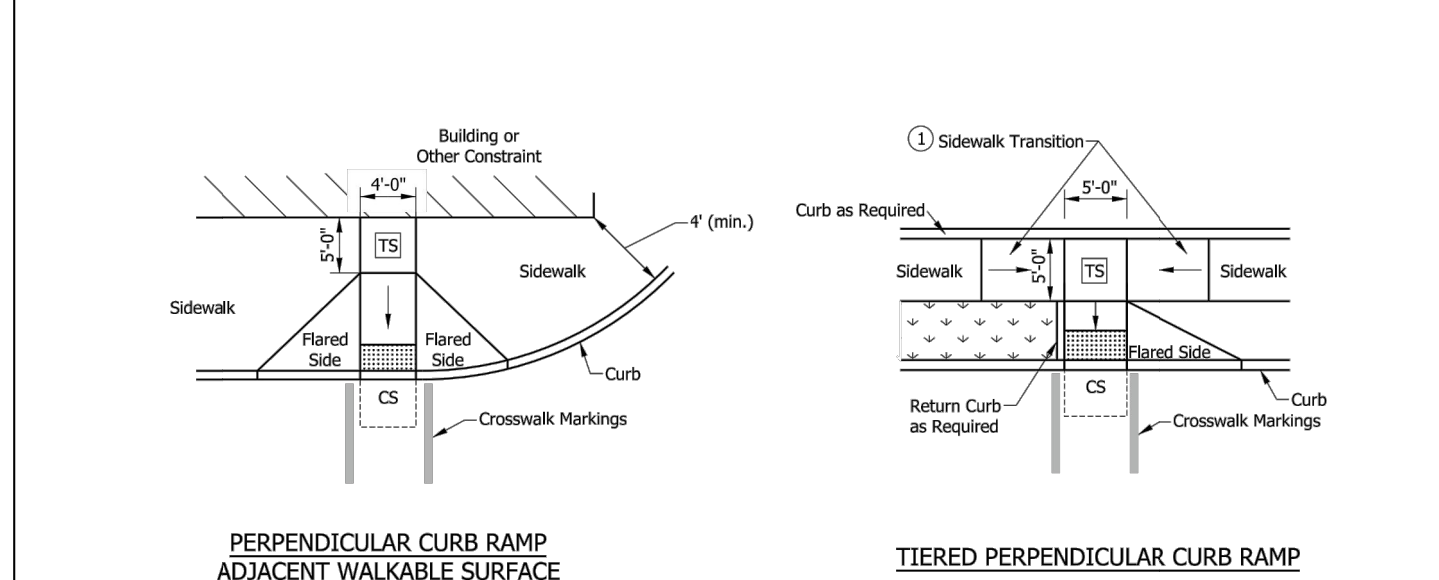
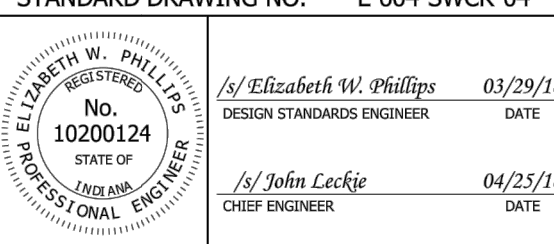
INDIANA DEPARTMENT OF TRANSPORTATION

PERPENDICULAR CURB RAMP

COMPONENT DETAILS

SEPTEMBER 2018

STANDARD DRAWING NO. E 604-SWCR-04



NOTES:

- Where insufficient width between the curb and back of sidewalk prevent a standard perpendicular curb ramp running slope, a sidewalk transition may be used to lower the sidewalk grade. The sidewalk transition running slope shall not exceed 8.33%. See Standard Drawing Series E 604-SWCR for sidewalk details.
- The turning space shall have a minimum clear dimension of 4 ft x 4 ft and a running slope of 2.00% maximum. Where the turning space is constrained at the back of the sidewalk, the minimum clear dimension shall be 4 ft x 5 ft, with the 5-ft dimension in the direction of the ramp running slope.

LEGEND:

- Buffer or Other Non-Walkable Surface
- Ramp
- Detectable Warning Surface
- Turning Space
- Clear Space

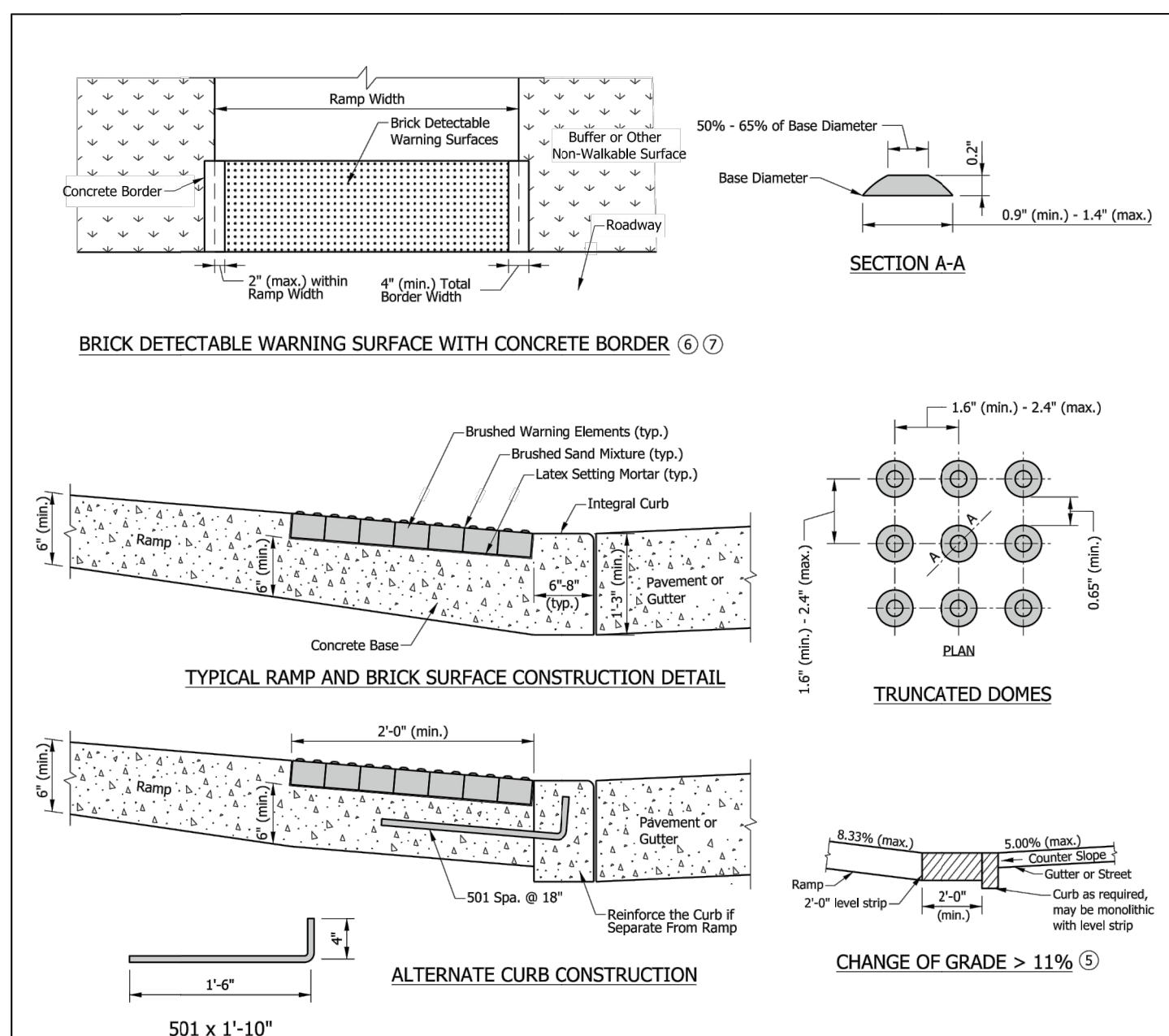
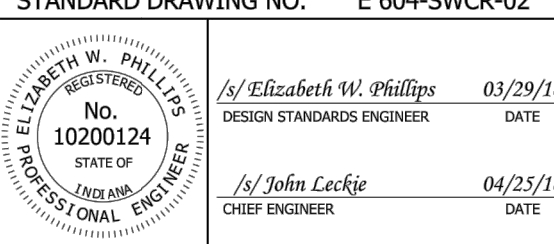
INDIANA DEPARTMENT OF TRANSPORTATION

PERPENDICULAR CURB RAMP

TYPICAL PLACEMENT

SEPTEMBER 2018

STANDARD DRAWING NO. E 604-SWCR-02



NOTES:

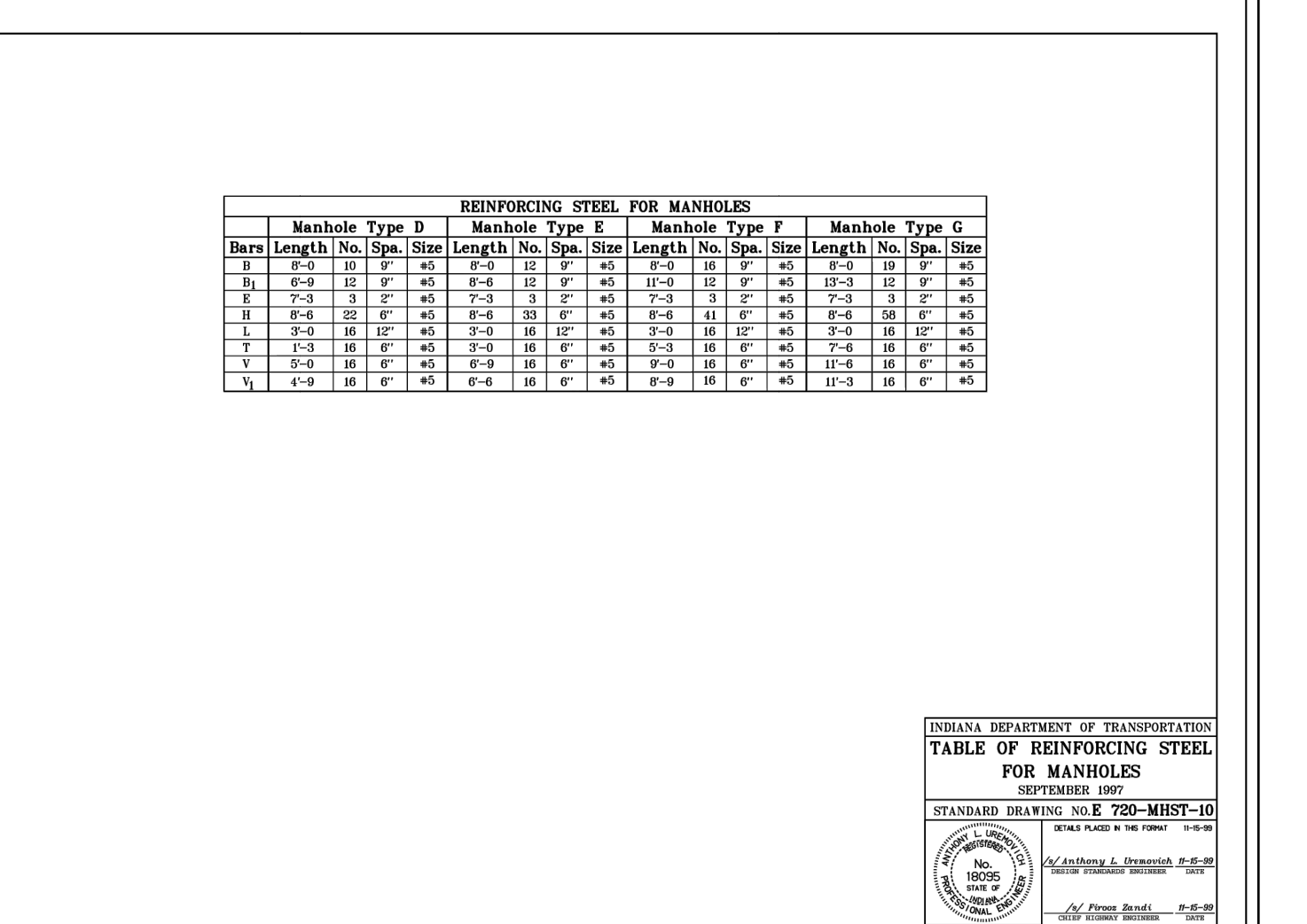
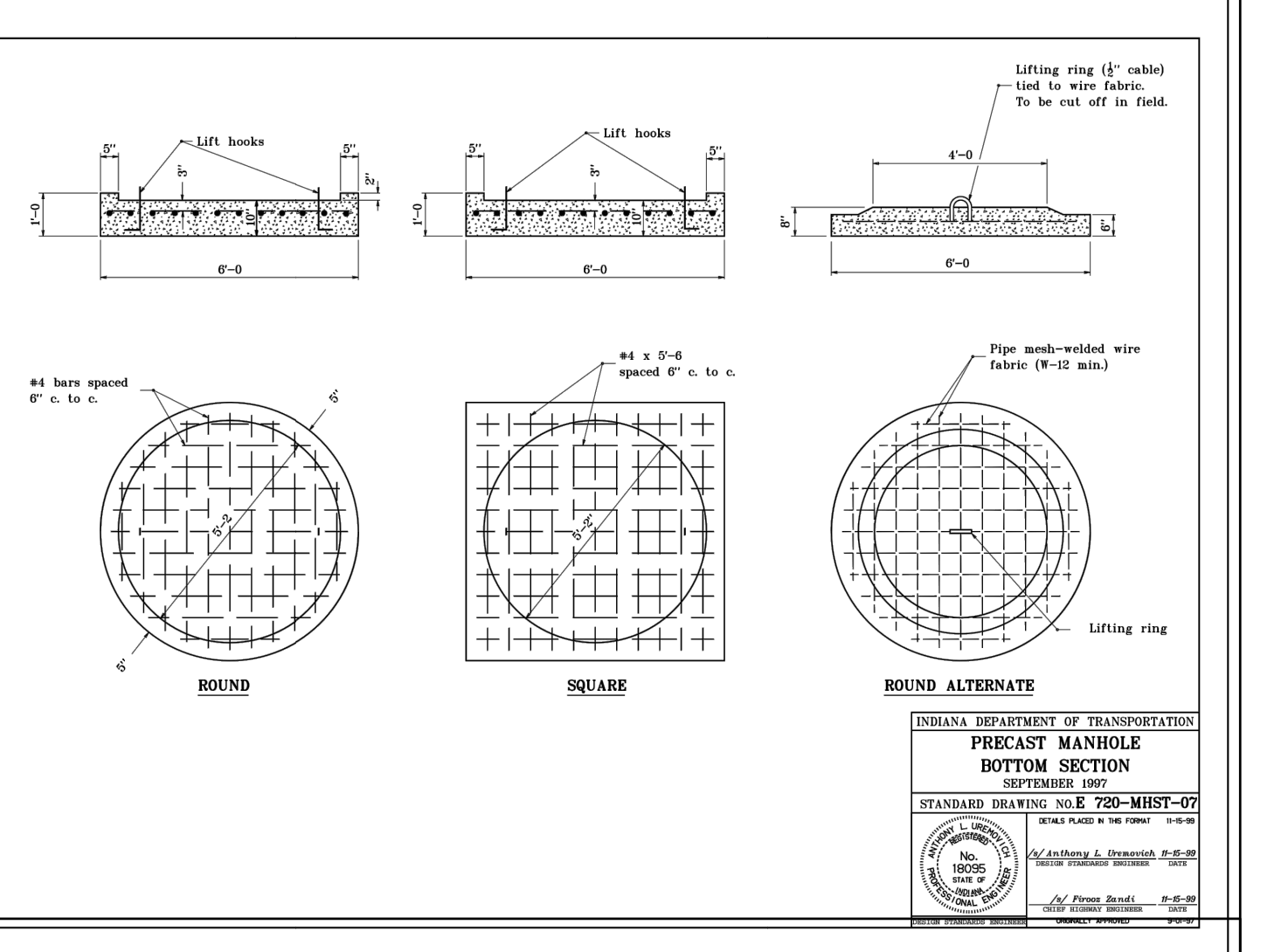
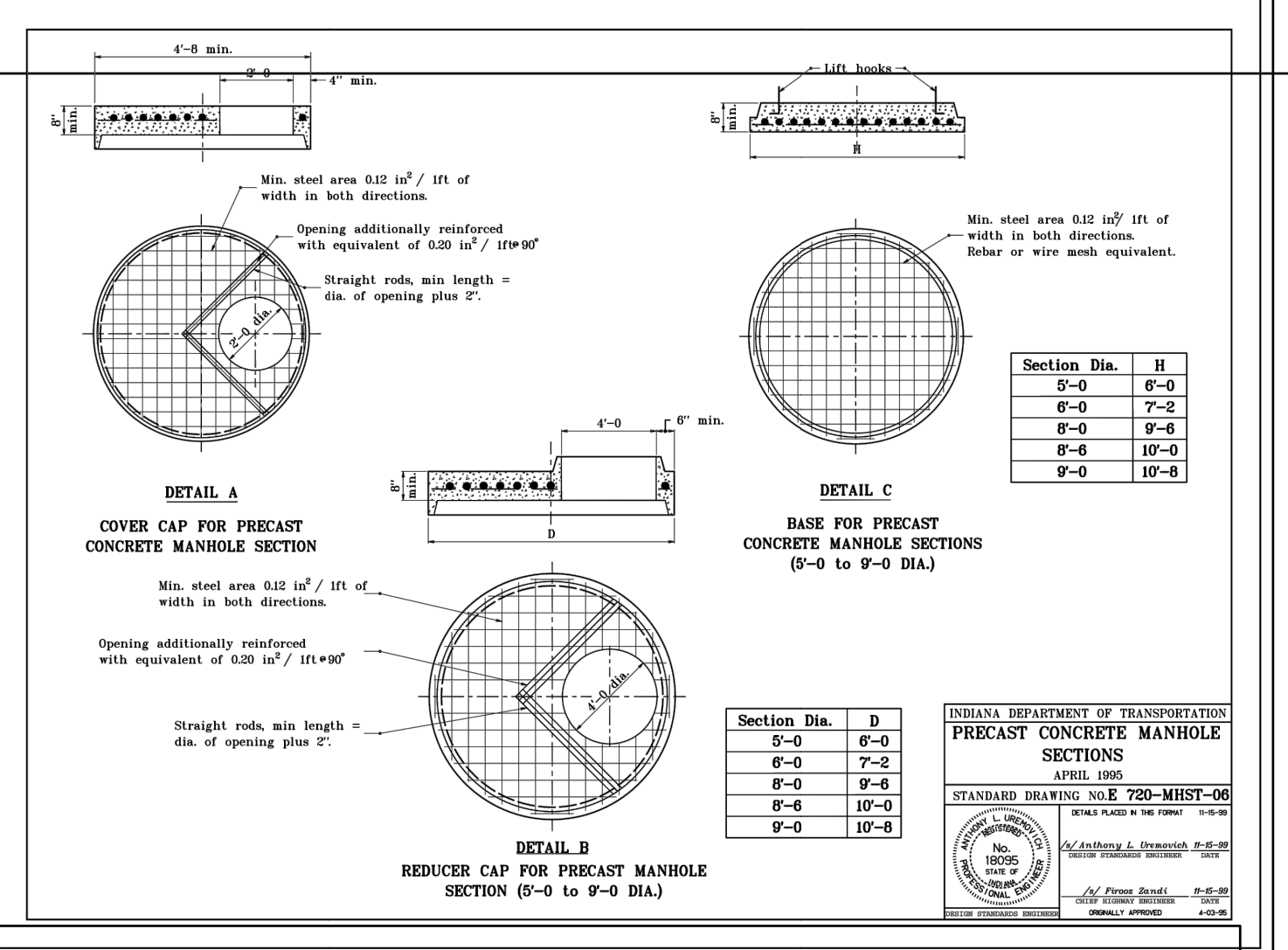
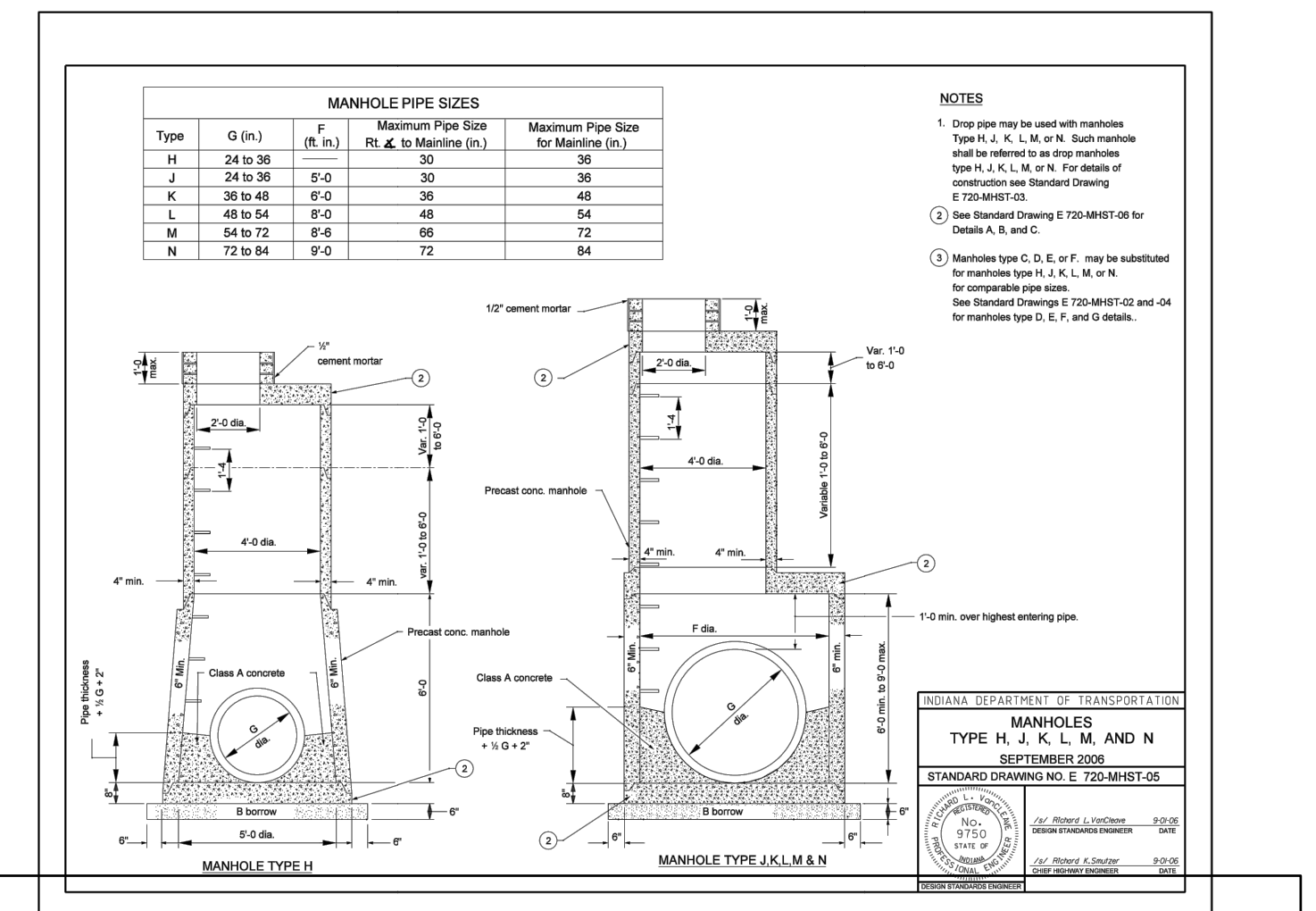
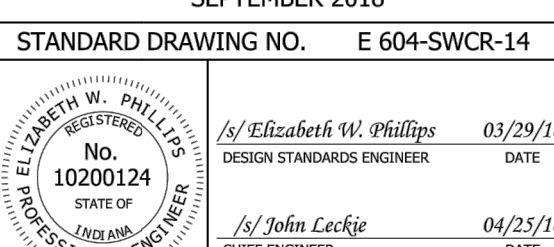
- Detectable warning surface shall consist of truncated domes. Domes shall be aligned in a square or radial grid pattern with diameter and center-to-center spacing within the ranges specified.
- The detectable warning surface may be field cut. Truncated dome spacing between adjacent panels shall be within the ranges specified.
- The detectable warning surface shall contrast visually with adjacent surfaces, either light-on-dark or dark-on-light.
- The detectable warning surface shall extend a minimum of 2 ft in the direction of pedestrian travel and extend the full width as shown. The detectable warning surface shall not be placed across a grade break.
- The maximum counter slope of the gutter or street at the bottom of the ramp shall be 5.00%. Where the algebraic difference between the running slope and the counter slope exceeds 11%, a 2-ft minimum level strip should be provided at the bottom of the ramp.
- Where a concrete border is used for forming, the border shall be cast monolithically with the curb ramp concrete. The concrete border shall not reduce the ramp width by more than 2 in. on each side.
- Where forming other than a concrete border is used, the edge restraint shall not encroach upon the ramp width.

INDIANA DEPARTMENT OF TRANSPORTATION

DETECTABLE WARNING SURFACE DETAILS

SEPTEMBER 2018

STANDARD DRAWING NO. E 604-SWCR-14



REVISION NUMBER | REVISION DATE | REVISION DESCRIPTION

CONSULTANTS

shrewsberry

731 SHADLAND STATION, INDIANAPOLIS IN 46204
317.841.4799 | 317.841.4792
shrewsb.com

3539 PRIORITY WAY SOUTH DRIVE
INDIANAPOLIS, INDIANA 46240
SUITE 200
Phone (317) 844-0777
E-Mail crpe@crpe.biz

ARCHITECTURE • INTERIORS
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GENERAL CONTRACTING • REAL ESTATE SERVICES

Cripe

Solutions by Design Since 1937

CONSTRUCTION DETAILS

GENERAL HOTELS CORPORATION
HOME2 SUITES BY HILTON
MUNSTER, IN

Matthew D. Wallace
REGISTERED PROFESSIONAL ENGINEER
No. 10202418
STATE OF INDIANA

Drawn By: RDR
Checked By: MDW
Credited To: BK
As Indicated

7/22/2021

Project Number: 0190149-10000

Site Development Hydraulic Narrative

Project Number 19-0161

Home2Suites

**9120 Calumet Ave
Munster, Indiana 46321
Lake County, Indiana**



Keith M Buck

Shrewsberry Project # 19-0161

June 29, 2020

Shrewsberry & Associates
7321 Shadeland Station, Suite 160
Indianapolis, Indiana 46256
317.841.4799



shrewsberry

YOUR VISION. OUR FOCUS.

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APPENDICES

Appendix A: NRCS Soils Report

Appendix B: Existing Conditions

Appendix C: Post-Developed Conditions

Appendix D: Pipe & Inlet Sizing Calculations

Appendix E: Water Quality Calculations

Appendix F: Lake Business Center – Hotel Site – Simborg Development, Inc – 2012 Final Engineering Improvement Plans

1. Project Narrative

1.1 Project Narrative

Simborg Development, Inc. is proposing to develop approximately 1.5 acres ± of primarily vacant commercial zoned land to a 107 room, four story hotel with parking, herein referred to as Home2Suites. The site is located in the northwest corner of Lake Business Center Planned Unit Development, and will occupy approximately 63,846 square feet of ground floor space with associated parking lots and spaces, curb cuts and drive lanes. There will be two separate entrance drives, one shared drive between Home2Suites and an existing Homewood Suites east of the subject tract, and one new private drive located at the west end of the onsite parking lot on the north side of Calument Ave. The onsite parking lot will accommodate 21 total spaces, including two ADA spaces. Additional parking spaces will be provided through shared parking lot agreements with Homewood Suites to the east and a parking lot located south of the proposed Home2Suites site.

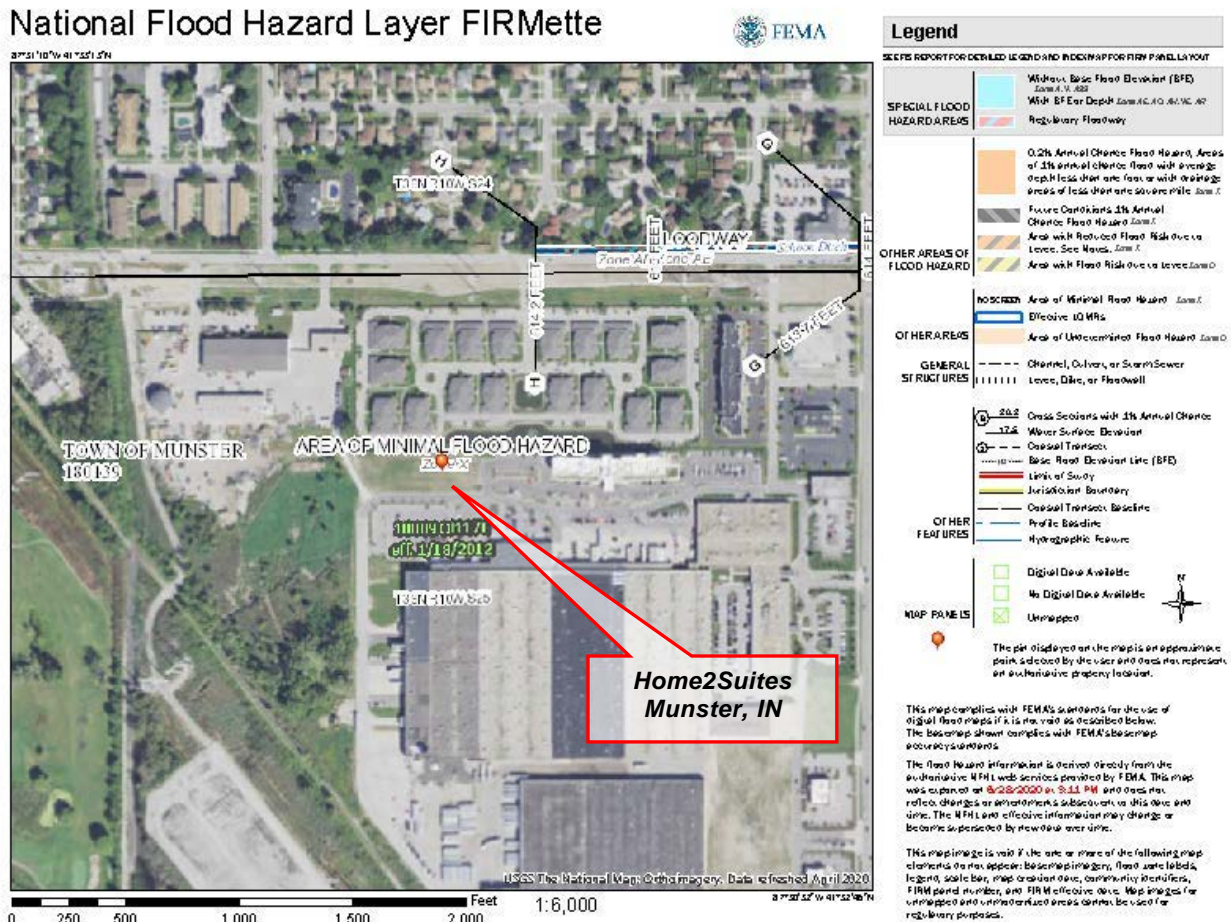
The Home2Suites project is part of a larger planned unit development. The Lake Business Center (LBC) encompasses approximately 60 acres of mixed commercial properties. All other properties in the LBC development have been constructed at this time. The Home2Suites storm network will be directly connected to a previously constructed and shared underground detention system, located due west of the existing Homewood Suites hotel, on the subject tract. The Home2Suites storm network will utilize a previously constructed mechanical bmp and the shared underground detention system to reduce peak flows.

The site is located in Section 25, Township 36 North, Range 10 West in Munster, IN, Lake County. The approximate coordinates of the center of the property is Latitude 41° 32' 59" North and Longitude 87° 30' 53" West. The property is zoned Commercial, according to the information found on Lake County GIS.



1.2 Floodzone Designation

Based upon a scaled interpretation of the Flood Insurance Map No. 18089C0017E for Lake County, Indiana, dated January 18, 2012, portions of the subject tract (primarily developed) **IS** located within Zone X. Zone X refers to minimal risk areas between the 1-percent and 0.2 percent-annual-chance floodplains. The subject tract **IS NOT** located within Zone A (Special Flood Hazard Area without Base Flood Elevation).



2. Hydrologic Analysis

2.1 Stormwater Design

The proposed Home2Suites site and parking area are located west of the existing Homewood Suites hotel in the Lake Business Center development.

Said development will consist of one existing underground detention system with a flow restricting structure that will store and release the site's stormwater runoff per the requirements set forth by the Town of Munster's and Lake County, Indiana requirements. One (1) existing offline mechanical BMP will be used to treat the disturbed limits of the proposed site and meet the City's SQU sizing requirements. The site

will discharge directly to an existing 48" storm sewer that will be relocated as part of this project. Refer to the Existing Conditions and Post Developed Conditions portions of this Narrative and Appendices for additional information.

2.2 Rainfall and Time of Concentration

The existing and proposed site runoff was calculated using the Rational Method. The time of concentration (Tc) for existing and proposed drainage basins were calculated using the TR-55 methodology as specified in the stormwater technical standards.

2.3 Existing Conditions

The Home2Suites site encompasses approximately 1.5 acres of primarily vacant commercial area, with residential property to the north, Homewood Suites hotel to the east, commercial area to the south, and undeveloped area to the west. The undeveloped area to the west was studied via the Lake Business Center Restoration Plan, prepared in 2017. No portion of the proposed site sits within 130 feet of delineated wetland area. A copy of the 2017 Restoration Plan can be found in Appendix G of this Report.

The subject tracts consist of the following soil types: Maumee loamy fine sand, 0 to 1 percent slopes. A USGS soil map and Report has been included with this Report. Curve numbers were assigned using existing land use in conjunction with soils mapping from the Natural Resource Conservation (NRCS). An abbreviated NRCS Soils Report can be found in Appendix A of this Report.

Detailed topography provided by Cripe in 2019 was used to determine the existing hydrologic conditions. The existing drainage areas generally drain via sheet flow and existing storm inlets to the existing underground detention system. The concentrated flow then travels via a deep 48" storm network that runs due northwest offsite. The existing controlled drainage areas has been evaluated as one controlled drainage basin, matching the limits of the proposed post-developed controlled drainage areas for the Home2Suites site.

2.4 Contributing Offsite Drainage Basins:

In addition to the Home2 Suites controlled drainage area (1.5 acres \pm) a combined tributary area of 5.93 acres \pm including acreage from the adjacent Homewood Suites parcel and portions of Calumet Ave (4.43 acres) is collected in the existing underground detention system. The 4.43 acres of contributing offsite drainage area is sent through a separate mechanical BMP for water quality treatment, prior to entering the shared underground detention system.

2.5 Existing Conditions Calculations:

The existing conditions model accounts for a controlled drainage area of 1.50 acres from Home2 Suites and 4.43 acres from the contributing offsite drainage basin. C-values of 0.90 for impervious areas and 0.45 for pervious areas were evaluated for pipe sizing calculations and detention evaluation. The original calculations, provided by SEH Engineers, is provided in Appendix B of this Report.

Allowable Post-Developed Release Rates:

The original calculations for the approved underground detention system for the Lake Business Center PUD evaluated the Town of Munster's Infrastructure Specifications Section 3-3- Allowable Release Rate limitations. The allowable release rate was based on, at a minimum, the predeveloped 2-year frequency

for the the Homewood Suites site and approved PUD site to the west (the proposed Home2Suites location).

Table 2.5a:

Existing Conditions Release Rates Aequitas Site (cfs) 2year – 30 min event:

* $Q_{2e} = 7.59$ cfs

*Calculations provided by SEH of Indiana

2.6 Proposed Conditions Calculations:

Simborg Development, Inc. is proposing to develop approximately 1.5 acres ± of primarily vacant commercial zoned land to a 107 room, four story hotel with parking, herein referred to as Home2Suites. The site is located in the northwest corner of Lake Business Center Planned Unit Development, and will occupy approximately 63,846 square feet of ground floor space with associated parking lots and spaces, curb cuts and drive lanes.

Said development will consist of one existing underground detention system with a flow restricting structure that will store and release the site's stormwater runoff per the requirements set forth by the Town of Munster's and Lake County, Indiana requirements. One (1) existing offline mechanical BMP will be used to treat the disturbed limits of the proposed site and meet the City's SQU sizing requirements. The site will discharge directly to an existing 48" storm sewer that will be relocated as part of this project. Refer to the Existing Conditions and Post Developed Conditions portions of this Narrative and Appendices for additional information.

The post-developed conditions models account for a controlled drainage area of 5.93 total acres for the Homewood Suites and Home2 Suites sites, with 1.5 acres contributing from the proposed Home2Suites site.

A runoff coefficient, C-value of 0.90 for impervious areas and 0.45 for pervious areas was evaluated for pipe sizing calculations. See Appendix C for additional information.

Underground Detention System:

To meet the allowable post-developed release rates a 6.8" orifice was required and approximately 19,000 cft of stone and chamber storage was provided. Please see Appendix C of this Report for additional information.

Storm Sewers:

The storm sewer system is designed using Hydraflow analysis to convey stormwater runoff at a minimum velocity of 2.5 feet/second through reinforced concrete pipes, when flowing full, while maintaining a hydraulic grade line elevation below the crown of the pipe at the 10-year storm event. For sizing of the storm sewer network, the controlled drainage basin was further broken down into a total of nine (9) contributing sub-basins based on proposed grading plans and structure locations. See Appendix D of the Report for Pipe Sizing Figures and Calculations.

2.7 Water Quality Calculations:

Site Runoff for the Home2 Suites site (0.97 acres impervious., 0.53 acres pervious) will be treated by one existing offline mechanical BMP unit to meet the standards for Water Quality as defined by the Lake County Stormwater Management and Clean Water Regulations Ordinance.

A 1-inch rainfall event was modeled using the SCS Type II–24hr evaluation. A Water Quality Curve Number of 98 was utilized for the impervious area. See Appendix E for additional information.

Table 2.8:

Structure: WQ1

| | | |
|--|-------------|--|
| Water Quality Controlled Drainage Area | 1.50 | acres |
| Impervious Area | 0.97 | acres |
| % Impervious | 64.67 | % |
| Qwq (Water Quality Treatment Rate) | 1.13 | cfs <i>from ICPR4 analysis</i> |
| Capacity of <i>offline AquaShield XC-4</i> | 1.86 | cfs <i>(offline unit per SQU Sizing Criteria)</i> |
| FloGard Dual Vortex DVS – 60S Unit constructed in 2012 – treatment capacity | 2.50 | cfs <i>(offline unit per FloGard Sizing Guide)</i> |