

PLAN COMMISSION STAFF REPORT

То:	Members of the Plan Commission
From:	Rachel Christenson, AICP, On-call Planner for the Town of Munster
Meeting Date:	July 11, 2023
Agenda Item:	PC Docket No. 23-015
Application:	Development Plan
Hearing:	PUBLIC HEARING
Summary:	Matt Kimmel/Centennial Village LLC, is requesting approval of a development plan of Building M within Centennial Village Planned Unit Development
Applicant:	Matt Kimmel/Centennial Village, LLC
Property Address:	9601 & 9605 N Centennial Drive
Current Zoning:	SD-PUD: Special District - Planned Unit Development
Adjacent Zoning:	North: CD-4.A (General Urban – A Character District); CD-4.R4 (General Urban – Multifamily Residence Character District) South: CZ (Civic Zone) East: CZ (Civic Zone) West: SD-M (Special District – Manufacturing)
Action Requested:	Approval of Site Plan
Additional Actions Rec	Juired: Building and Lot Plan Process Building Permit Application Process
Staff Recommendation	n: Approve with conditions

Attachments:

- 1. Development Plan Review Application
- 2. Centennial Village Lot 9 Building M Civil Drawings prepared by DVG dated 05.26.2023
- 3. Landscape Plan prepared by Hubinger dated 06.26.2023
- 4. Windy City Social Exterior Renderings

BACKGROUND

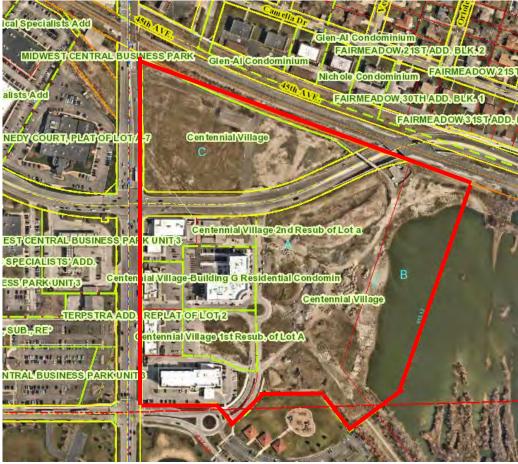


Figure 1: Centennial Village PUD outlined in red.

The Centennial Village PUD is currently governed by the Centennial Village PUD Design Standards and Conceptual Plan that was adopted February 15, 2017. The purpose of the Centennial Village Development is to provide the Town of Munster with a sustainable, mixed-use, walkable lifestyle community adjacent to the key regional thoroughfares of Calumet Avenue and 45th Street.

Matt Kimmel/Centennial Village LLC, is requesting approval of a development plan of Building M within Centennial Village Planned Unit Development

ANALYSIS

Centennial Village was designed to be a sustainable, mixed-use, walkable lifestyle community. The

1005 Ridge Road • Munster, IN 46321 • (219) 836-8810 • Police/Fire Emergencies 911 Police Non-Emergency (219) 836-6600 • Fire Non-Emergency (219) 836-6960

www.munster.org

treatment of building design, parking, landscaping, site improvements and pedestrian spaces as outlined in the Centennial Village PUD Design Standards is essential to creating the pedestrian oriented environment for the Centennial Village walkable lifestyle community. The Pensey Greenway is an integral part of this development.

Section 4: Building Materials and Architectural Design Standards and Section 6: Building Design Elements

The petitioner is proposing a Retail-Single Tenant use for Building M with the PUD Amendment Request (PC Docket No. PC23-013). That petition proposes that Building M would be two story structure with Class 1 & 2 exterior building materials on the first floor, and Class 3 & 4 exterior building materials on the second floor. The renderings submitted with this application appear to be inline with these standards, but architectural drawings will need to be submitted for a full review.

Section 7: Site Circulation – Pedestrian

The intent of the Centennial Village development is to be a sustainable, mixed-use, walkable lifestyle Community. Language in the PUD Design Standards states that the "treatment of building design, parking, landscaping, site improvements and pedestrian spaces as outlined in the Centennial Village PUD Design Standards is essential to creating the pedestrian oriented environment for the Centennial Village walkable lifestyle community."

With Building M moving to the west, it has been pulled off of the Pensey Greenway. It also appears that the sidewalk along the south side of 45th Street has not been included on the submitted drawings. Staff would like to see the site plan modified to show how pedestrians using Building M would navigate to Building I and the rest of the Centennial Village pedestrian network without having to get in a vehicle or walk through grass.

Section 8: Parking

If the intent is for Lot 8 and Lot 9 to share parking, a Cross Access Easement is required per the Centennial Village PUD Design Standards. The following parking standards must be met for Building M:

Land Use	Minimum Required Parking
Retail – Single Tenant	3.25 parking spaces per 1,000 sf of Gross Building Floor Area

The proposed structure is 7,098 SF. According to the Centennial Village PUD Design Standards, a minimum of 23 spaces are required. The petitioner is providing 139 spaces.

Section 10: Site Landscaping

A landscaping plan has been submitted for Building M and the surrounding parking lot. There are trees indicated on the plan that are not on the approved tree list for Parking Lot Islands and General Landscaping (Table 10-13-1) or Trees for Parkway Planting (Table 10-13-2) that are found in the Centennial Village PUD Design Standards. Staff would like to see an updated landscaping plan with trees from adopted lists. If a species is selected that is not on this list, staff would like to have a letter/email stating why a different species was selected (nursery unavailability, etc.).

Section 14: Site Furniture, Fixtures & Equipment

Per the Centennial Village PUD Design Standards, site furnishings and fixtures will be incorporated into the final site design of all buildings. At a minimum, the locations of bicycle racks, decorative trash receptacles, pedestrian benches, and decorative plant containers must be shown on the site plan.

Section 15: Utility Service

During Site Plan Review, it was requested that the water main be relocated to the utility easement to the west. Staff would like to understand if there was a reason this could not be accommodated.

Section 16: Storm Water Management

Maintenance of the hydrodynamic separator is not included on the Post-Construction Stormwater Management Plan on Sheet C-301. This addition should be made to the drawing set.

STAFF RECOMMENDATION

Staff recommends to approve the plat as presented with the following conditions:

- 1. Approval of PC Docket No. 23-013 and 23-014 and any conditions that are part of those approvals.
- 2. The addition of a sidewalk on the south side of 46th Street as shown in the Centennial Village Concept Plan.
- 3. The sidewalk network around Building M will be modified to connect to the future Building I and the rest of the Centennial Village pedestrian network.
- 4. A Cross Access Easement for shared parking between Lots 7 and 8 is developed and recorded with the Final Plat for the subdivision of Lot A.
- 5. Replacement of landscape materials to meet the approved tree and shrub lists found in the Centennial Village PUD Design Standards.
- 6. The locations of site furnishings and fixtures will be shown on the site plan (including bicycle racks, decorative trash receptacles, pedestrian benches, and decorative plant containers).
- 7. Maintenance of the hydrodynamic separator in the Post-Construction Stormwater Management Plan.

MOTION

The Plan Commission may wish to consider the following motion:

Motion to approve PC Docket No. 23-015, a development plan of Building M within Centennial Village Planned Unit Development, with the conditions recommended by staff.



OWNER INFORMATION:	
Matt Kimmel	
Name of Owner	Phone Number
631 Killarney Drive Dyer, IN 46311	matt@mkimmel.com
Street address, City, ST, ZIP Code	Email address

Town of Munster Plan Commission Petition Application

APPLICANT OR PETITIONER INFORMATION (if different than above):

Matt Kimmel	
Name of Applicant/Petitioner	Phone Number
631 Killarney Drive Dyer, IN 46311	
Street address, City, ST, ZIP Code	Email address
PROPERTY INFORMATION: Centennial Village	

Business or Development Name (if applicable)	PUD
9605 N. Centennial Drive Munster, IN 46321	
Address of Property or Legal Description	Current Zoning

APPLICATION INFORMATION:

Please select what this Application is for:

Subdivision	If yes, select one of the following:	Preliminary Plat
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X Development Plan Review

Rezoning	(including	Planned U	Init Develo	pment) – Pro	posed Zonin	g District

Brief Description of Project:

Site design for Building M (Lot 9) within Centennial Village PUD. The building is a two (2) story Restaurant (Windy City Social), approximately 7,162 sf total.

Russ Pozen, PE

Name of Registered Engineer, Architect or Land Surveyor

(219) 281-4068 Phone Number

1155 Troutwine Road Crown Point, IN 46307

Street address, City, ST, ZIP Code

rpozen@dvgteam.com Email address

□ Final Plat

Date: _____ Application Fee: \$_____ Sign Fee: \$

Petition PC _____-

CENTENNIAL VILLAGE - LOT 9 - BUILDING "M" 9603 N. CENTENNIAL DRIVE MUNSTER, INDIANA

ISSUED FOR REVIEW - 06/08/2023



Location Map (No Scale)

BENCHMARK

SITE BENCHMARK CUT X IN CURB AT VILLAGE PARKWAY & N. CENTENNIAL DRIVE ELEVATION = 617.49 (NAVD88)

Know what's **below.Call** before you dig.

To Submit a Locate Request 24 Hours a Day, Seven Days a Week: Call 811 or 800-382-5544 www.Indiana811.org



INDEX OF SHEETS

C001 C101 C102 C103 C104 C105 C106 C201-C205 C301-C205 C301-C304 E101 E201-E204 Cover Sheet Existing Conditions Demolition Plan Site Plan Grading Plan Utility Plan Stormwater Pollution Prevention Plan (SWPPP) Construction Details SWPPP Details Lighting Plan Lighting Details

LEGEND

0	EXISTING DRAINAGE STRUCTURE		EXISTING CONTOURS
	EXISTING END SECTION	700	PROPOSED CONTOURS
0	EXISTING SANITARY STRUCTURE		BOUNDARY LINES
v	EXISTING FIRE HYDRANT		RIGHT-OF-WAY LINES
۲	EXISTING VALVE & BOX		PROPOSED LOT LINES
BB	EXISTING B-BOX		UNDERLYING LOT LINE
0*	EXISTING STREET LIGHT		EASEMENT LINES
- • -	POWER POLE		BUILDING LINES
SBC	SBC PEDESTAL	xx	CHAINLINK FENCE
MB	MAIL BOX	OO	ORNAMENTAL FENCE
0	PROPOSED DRAINAGE STRUCTURE	ОНШ	OVERHEAD POWER LINES
	PROPOSED END SECTION	— T — — — —	TELEPHONE ROUTE
0	PROPOSED SANITARY STRUCTURE	— E — — — —	ELECTRIC ROUTE
۲	PROPOSED FIRE HYDRANT	G	GAS ROUTE
\boxtimes	PROPOSED VALVE & VAULT		EXISTING WATER
۲	PROPOSED VALVE & BOX	—))———	EXISTING STORM
BE	PROPOSED B-BOX		EXISTING SANITARY
<u>~*</u>	PROPOSED STREET LIGHT	— w — —	PROPOSED WATER
	DIRECTION OF FLOW		PROPOSED STORM
1 -			PROPOSED SANITARY
	OVERLAND FLOOD ROUTE	•	
000.00 T/W 000.00 B/W	PROPOSED TOP RETAINING WALL ELEV, PROPOSED BOTTOM OF RETAINING ELE		
000.00	PROPOSED TOP OF CURB ELEVATION PROPOSED GUTTER FLOWLINE ELEVATI	ON	
000.00	PROPOSED SURFACE ELEVATION		
	PROPOSED		
STORM SEWER	CB.#1 /48"Ø 1022Z1, 1020M1 R: 100.00 I: 95.00 (W) I: 94.00 (E)	TYPE & LABEL/DIAMETER TYPE OF FRAME & COVER RIM ELEVATION PIPE INVERT AND DIRECTION PIPE INVERT AND DIRECTION	
SANITARY SEWER	SAN.MH A /48"Ø 1022Z1, 1020AGS R: 100.00 I: 94.00 (W) I: 93.90 (E)	TYPE & LABEL/DIAMETER TYPE OF FRAME & COVER RIM ELEVATION PIPE INVERT AND DIRECTION PIPE INVERT AND DIRECTION	

WATER

FIRE HYDRANT & NUMBER LABEL GROUND ELEVATION

V.B #1 W/ 6" GATE VALVE

G: 100.0 T/P: 95.0 V.B FOR VALVE BOX AND V.V FOR VALVE IN VAULT SIZE OF GATE VALVE OR TAPPING SLEEVE GROUND ELEVATION TOP OF PIPE ELEVATION

PROJECT CONTACTS

SCHOOL DISTRICT SCHOOL TOWN OF MUNSTER 8616 COLUMBIA AVENUE MUNSTER, IN 46321 (219) 836-9111

WATER UTILITY TOWN OF MUNSTER WATER DEPARTMENT 1005 RIDGE ROAD MUNSTER, IN 46321 (219) 836-6970

ELECTRIC & GAS UTILITY NIPSCO 801 E. 86th AVENUE MERRILLVILLE, IN 46410 (800) 464-7726

DEVELOPER/OWNER MATT KIMMEL 631 KILLARNEY DRIVE DYER, INDIANA 46311 MATT@MKIMMEL.COM MUNICIPAL TOWN OF MUNSTER COMMUNITY DEVELOPMENT 1005 RIDGE ROAD MUNSTER, IN 46321 (219) 836-6995

SANITARY SEWER UTILITY TOWN OF MUNSTER SEWER DEPARTMENT 1005 RIDGE ROAD MUNSTER, IN 46321 (219) 836-6970

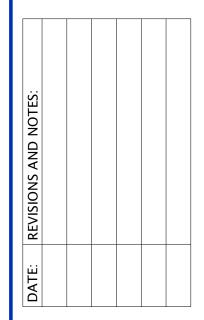
CABLE UTILITY COMCAST 16 W. 84th DRIVE MERRILLVILLE, IN 46410 (219) 738-2780

TELECOM UTILITY AT&T 5858 N. COLLEGE AVENUE INDIANAPOLIS, IN 46220 (317) 252-4007



1155 Troutwine Road Crown Point, IN 46307 P: (219) 662-7710 F: (219) 662-2740 www.dvgteam.com

CENTENNIAL VILLAGE 631 KILLARNEY DRIVE DYER. INDIANA 46311

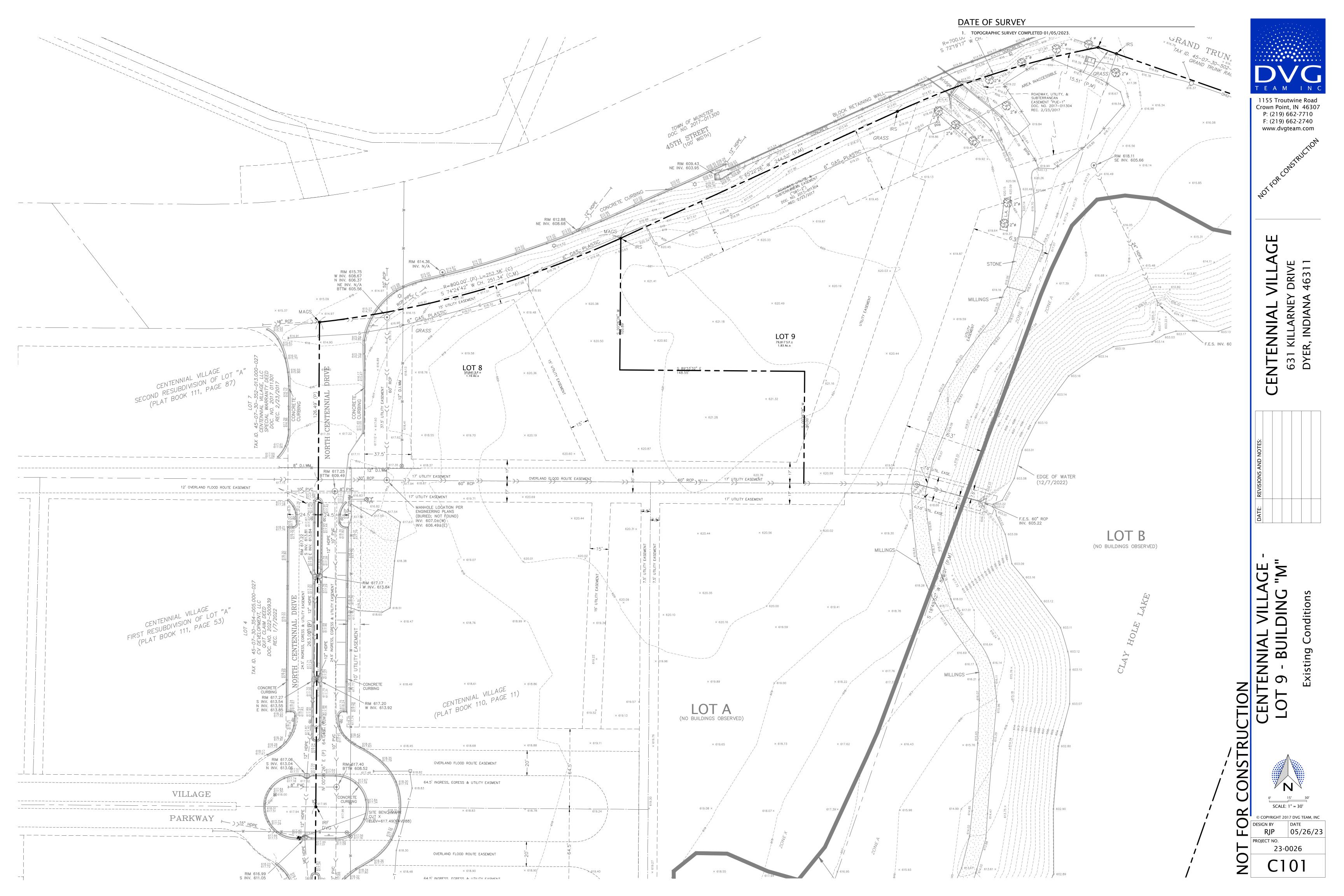


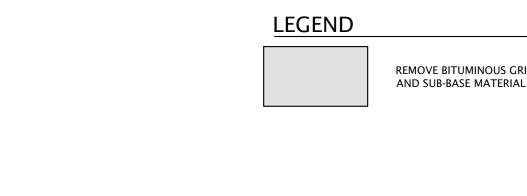
CENTENNIAL VILLAGE LOT 9 - BUILDING M

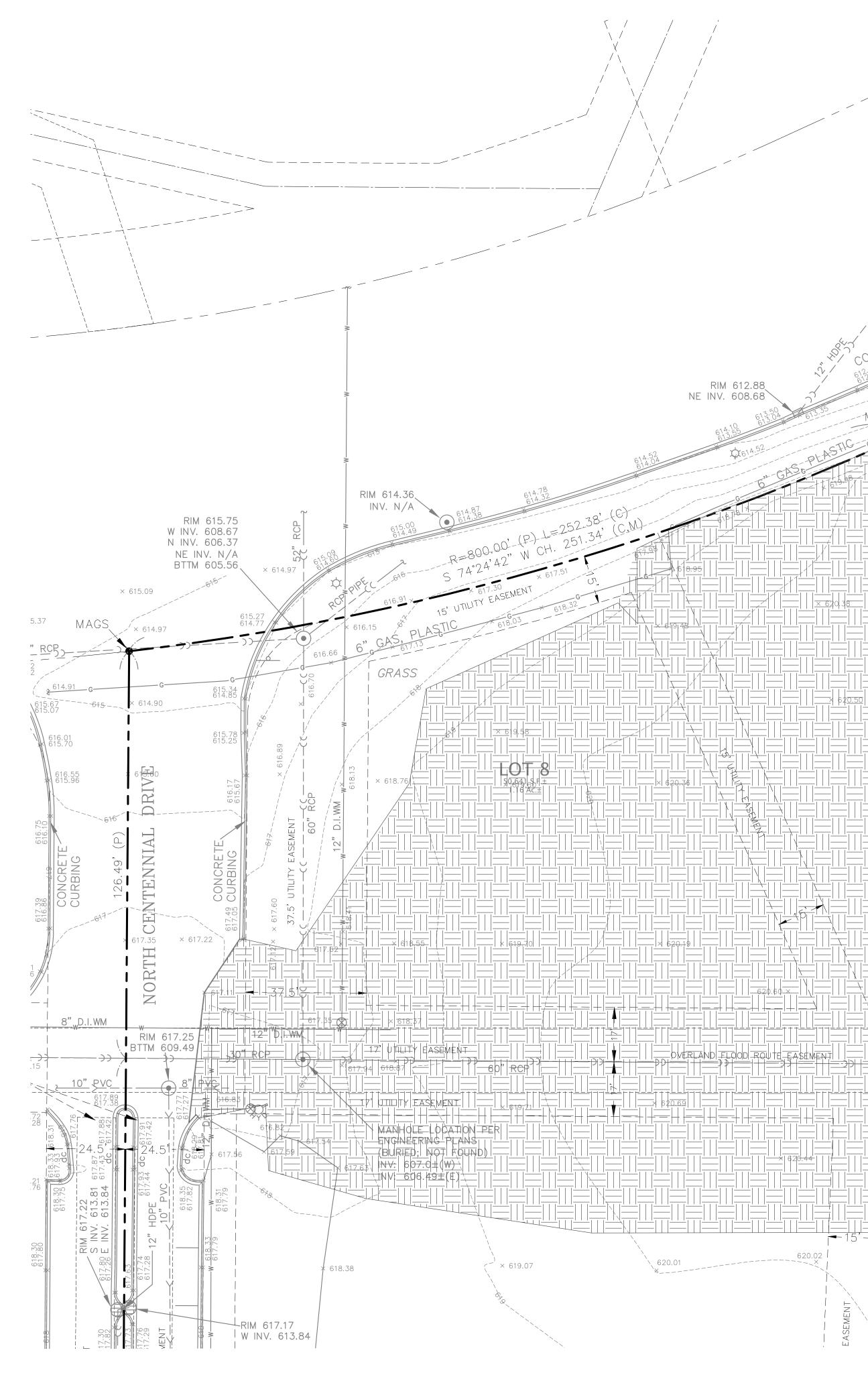
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Cove

NO SCALE © COPYRIGHT 2017 DVG TEAM, INC DESIGN BY DATE DVG 05/26/23 PROJECT NO. 23-0026 COO1



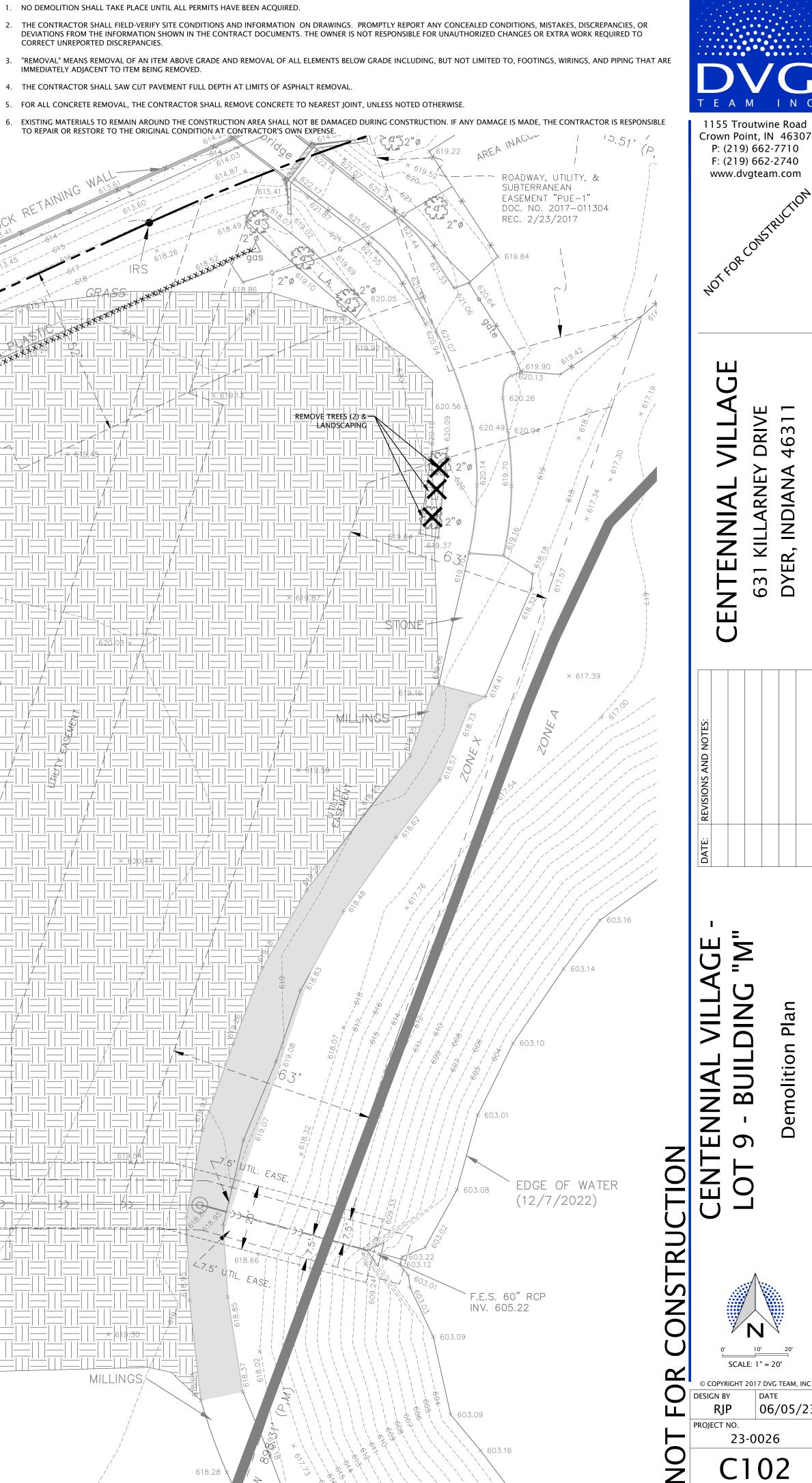


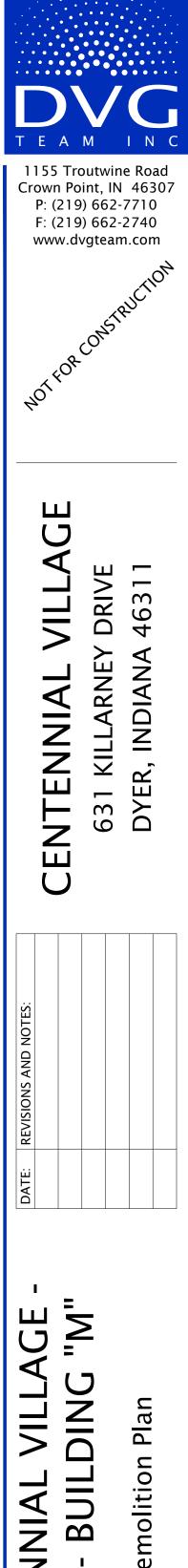


NOTES CONTRACTOR TO STRIP AND REMOVE SOD FROM ALL AREAS TO BE REMOVE BITUMINOUS GRINDINGS X ITEM TO BE REMOVED REGRADED AND PROPERLY DISPOSE. REMOVE SUBGRADE MATERIAL OR CORRECT UNREPORTED DISCREPANCIES. TOPSOIL AS NEEDED · X X X X X X X X LINEAR REMOVAL ITEM GAS MAIN TO BE RELOCATED BY NIPSCO RIM 609.43 NE INV. 603.95

-171 IUTILITY EASEMERT I 47, UTHENTY EASEMENT

- IMMEDIATELY ADJACENT TO ITEM BEING REMOVED.

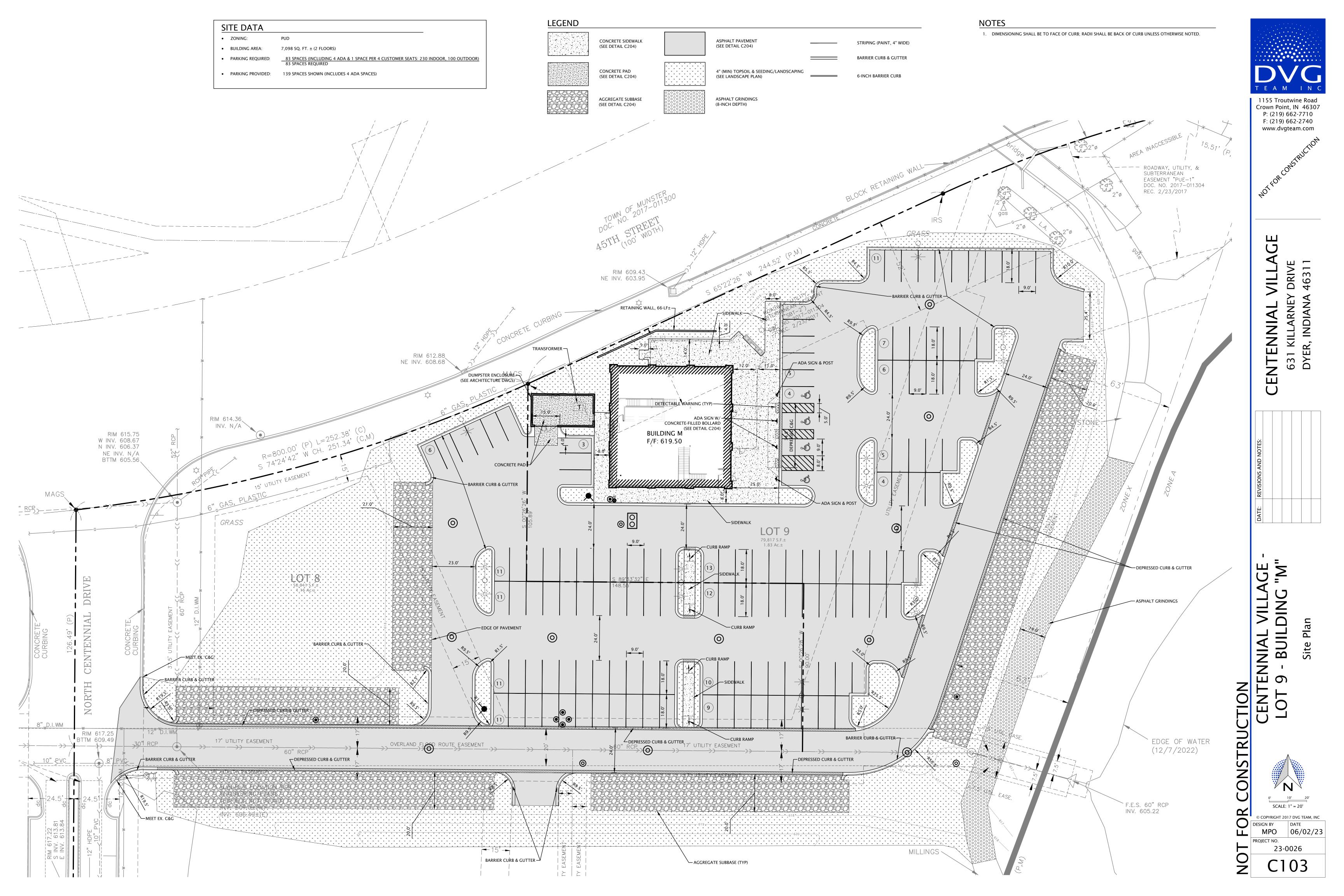


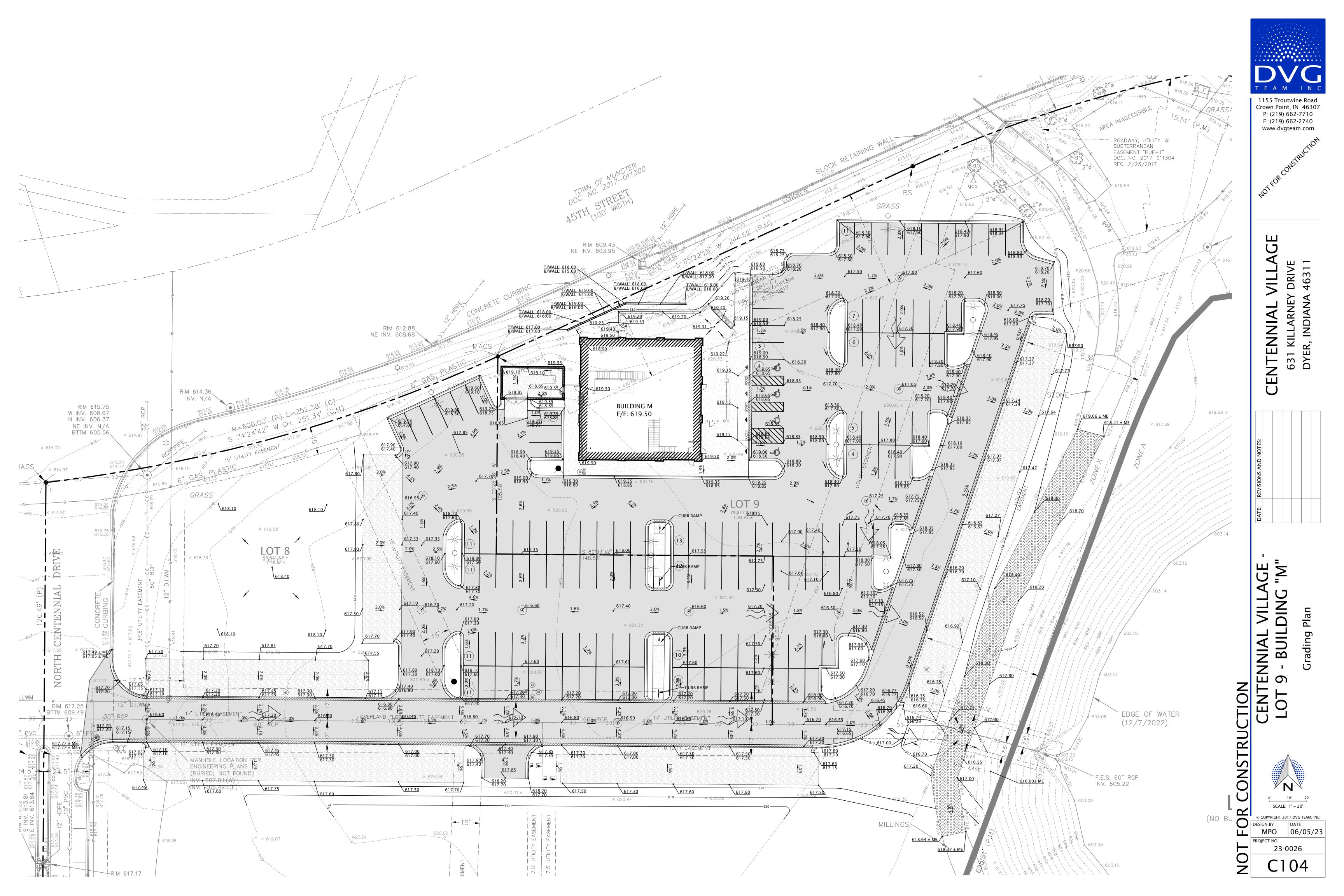


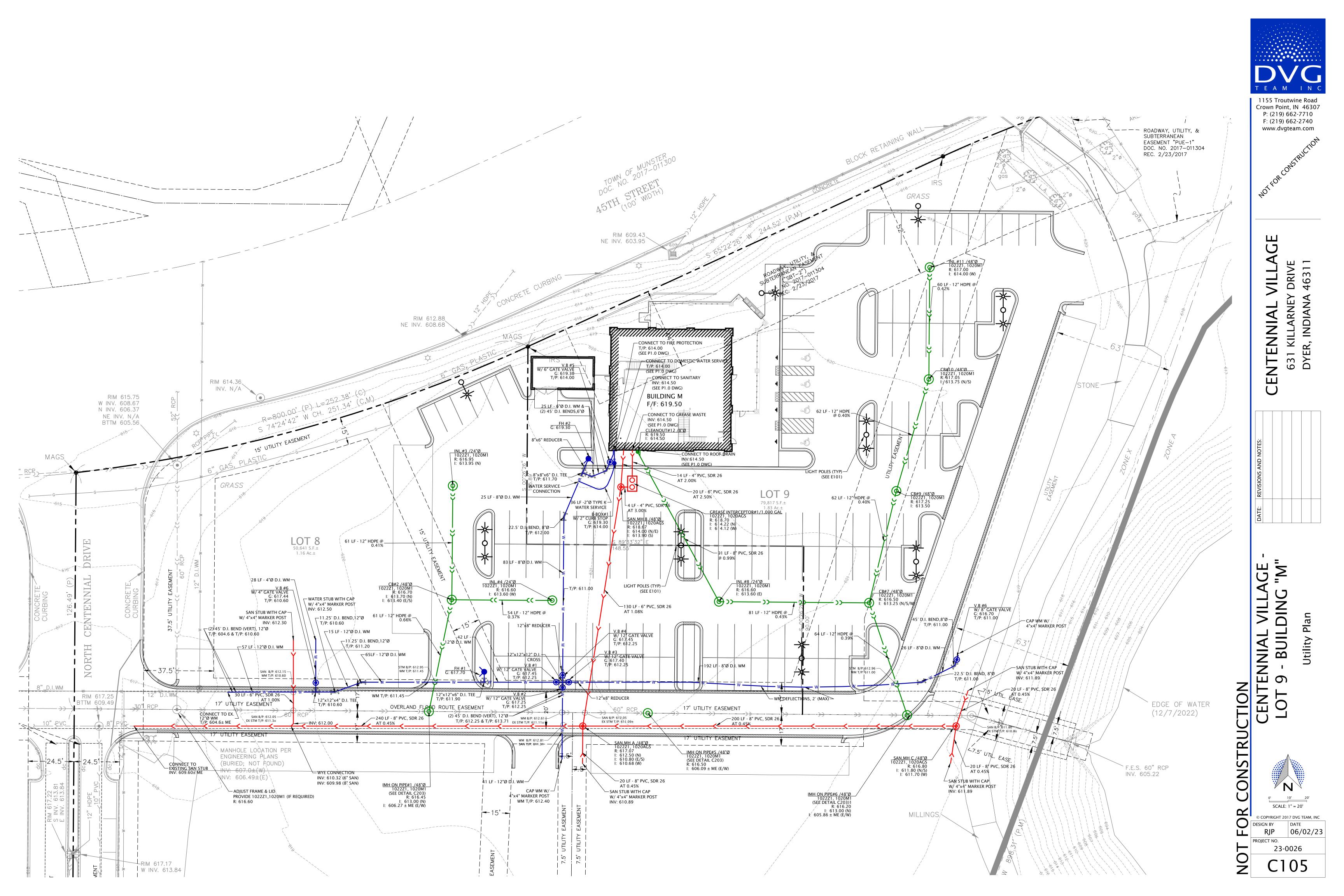
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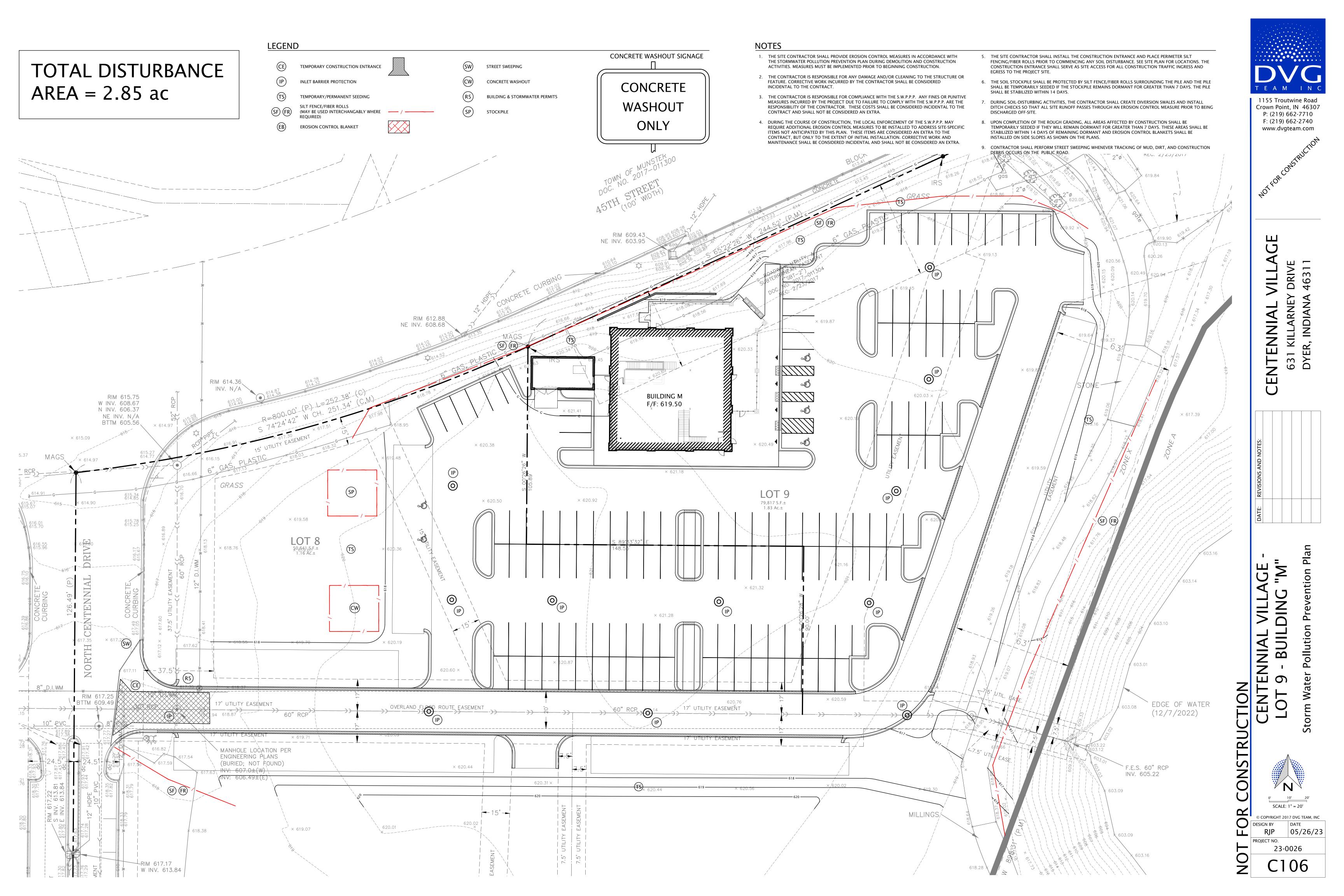
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06/05/23









SITE DEVELOPMENT COMMON EXCAVATION AND EARTHWORK **GENERAL SPECIFICATIONS**

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 has a depth of topsoil variation throughout the site. The geotechnical report shows the topsoil depths at several locations throughout the project site. The Contractor shall strip and stockpile all topsoil at the location designated in the Site Development Drawings or as directed by the owner.
- 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

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 surface elevation. All fill shall be placed as structural fill
- for buildings and parking lots. 4. Prior to excavation an on-site Pre-construction Meeting shall be held between the Engineer, Owner/Owner's
- Representative and General Contractor to discuss earthwork protocol. 5. During the progress of the work, if subsurface or latent physical conditions are encountered at the site differing materially from those indicated in the contract or if ordinarily encountered at the site, the party discovering such conditions shall promptly notify the Owner/Owner's Representative/General Contractor and the Engineer in writing of the specific differing conditions. Upon written notification, the Engineer and Owner/Owner's Representative/General Contractor will investigate the conditions, and determine if adjustments to the Construction Documents and/or to the Contract are warranted. No contract adjustment which results in a benefit to the Contractor will be allowed unless the Contractor has provided the required written notice of a changed condition.

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 95% 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.

INDIANA 811.

GENERAL NOTES

1. The Town of Munster, DVG Team, Inc. (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

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 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 Municipal Engineer.

7. All proposed sanitary sewer, storm sewer, water main and service lines under and within 2' of pavement, curbs, and sidewalk shall be backfilled with crushed limestone (INDOT #53) or material consistent with Class I or II material as described in ASTM D2321 placed in 8" maximum layers and mechanically compacted to 95% modified proctor density. Slag is not permitted.

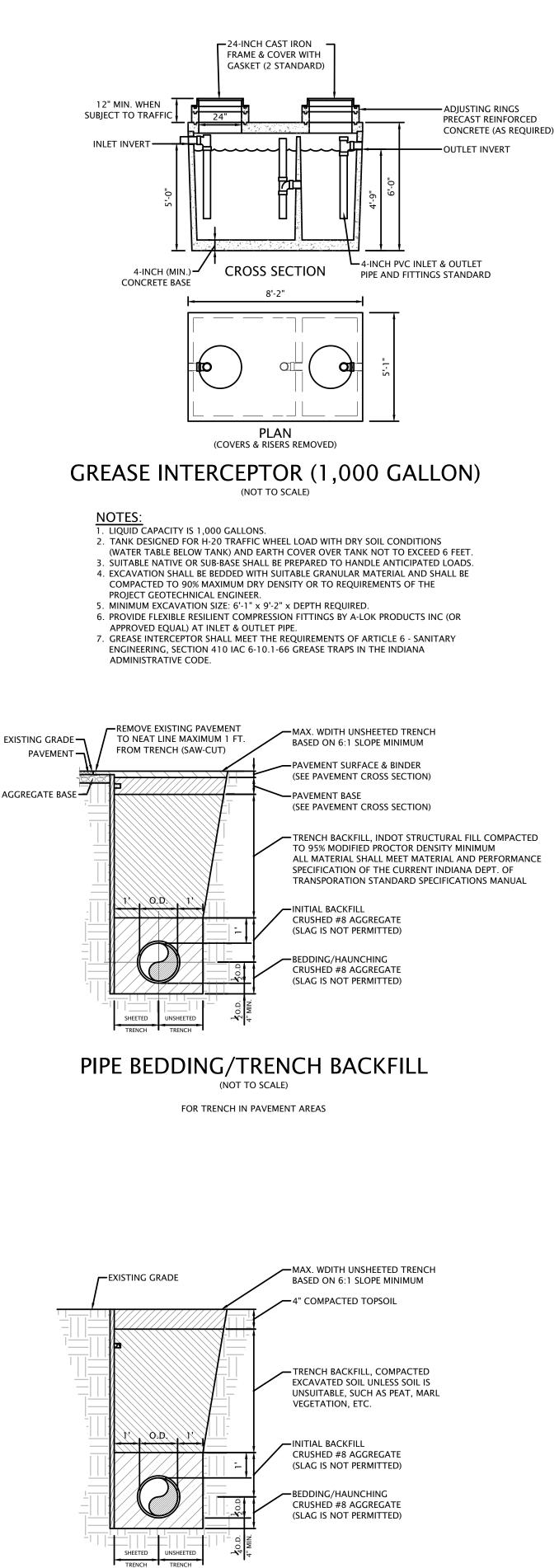
8. Materials used for water, sanitary sewer, storm sewer and streets shall conform to the Town of Munster standards and specifications.

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 Municipal Engineer.

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

11. Street signage shall be included in accordance with the MUTCD requirements applicable at the time of construction.

12. The Owner/General Contractor shall be responsible for any and all utility new customer form submissions. Utility company review typically cannot begin until all new customer forms have been submitted.

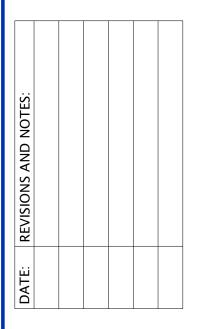


PIPE BEDDING/TRENCH BACKFILL (NOT TO SCALE)

FOR TRENCH IN GRASS/LANDSCAPED AREAS

1155 Troutwine Road Crown Point, IN 46307 P: (219) 662-7710 F: (219) 662-2740 www.dvgteam.com

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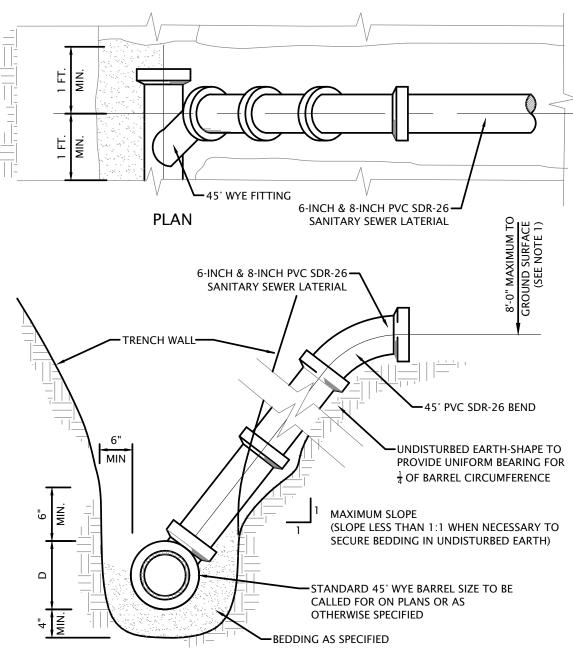


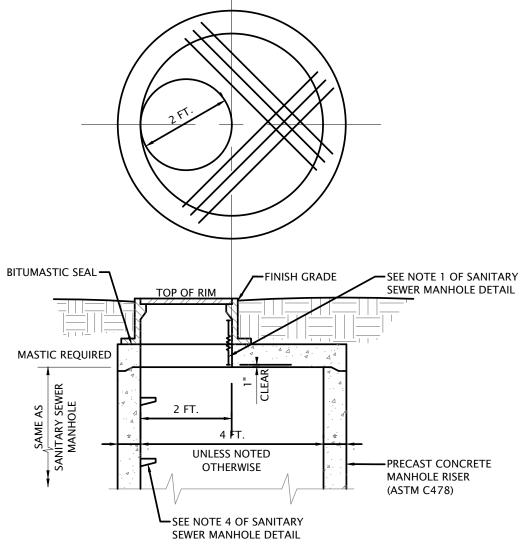
SANITARY SEWER GENERAL NOTES

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

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





CROSS SECTION

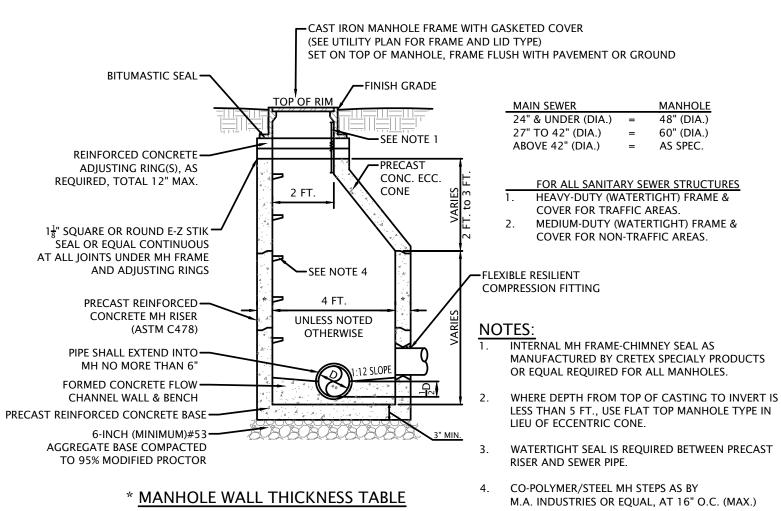
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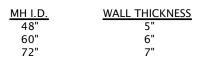
1. RISERS TO BE CONSTRUCTED IN LIEU OF WYES WHERE SEWER DEPTH EXCEEDS 10 FEET. FOR

PIPE MATERIAL AND CONCRETE, SEE SPECIFICATIONS.

2. ALL SANITARY SEWER SERVICE LATERALS SHALL BE PLUGGED WITH A WATERTIGHT CAP AND SHALL BE LOCATED WITH 4-INCH × 4-INCH WOOD MARKERS TO IDENTIFY LATERAL END.

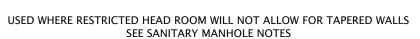
> SANITARY SEWER SERVICE (NOT TO SCALE)





(NOT TO SCALE)



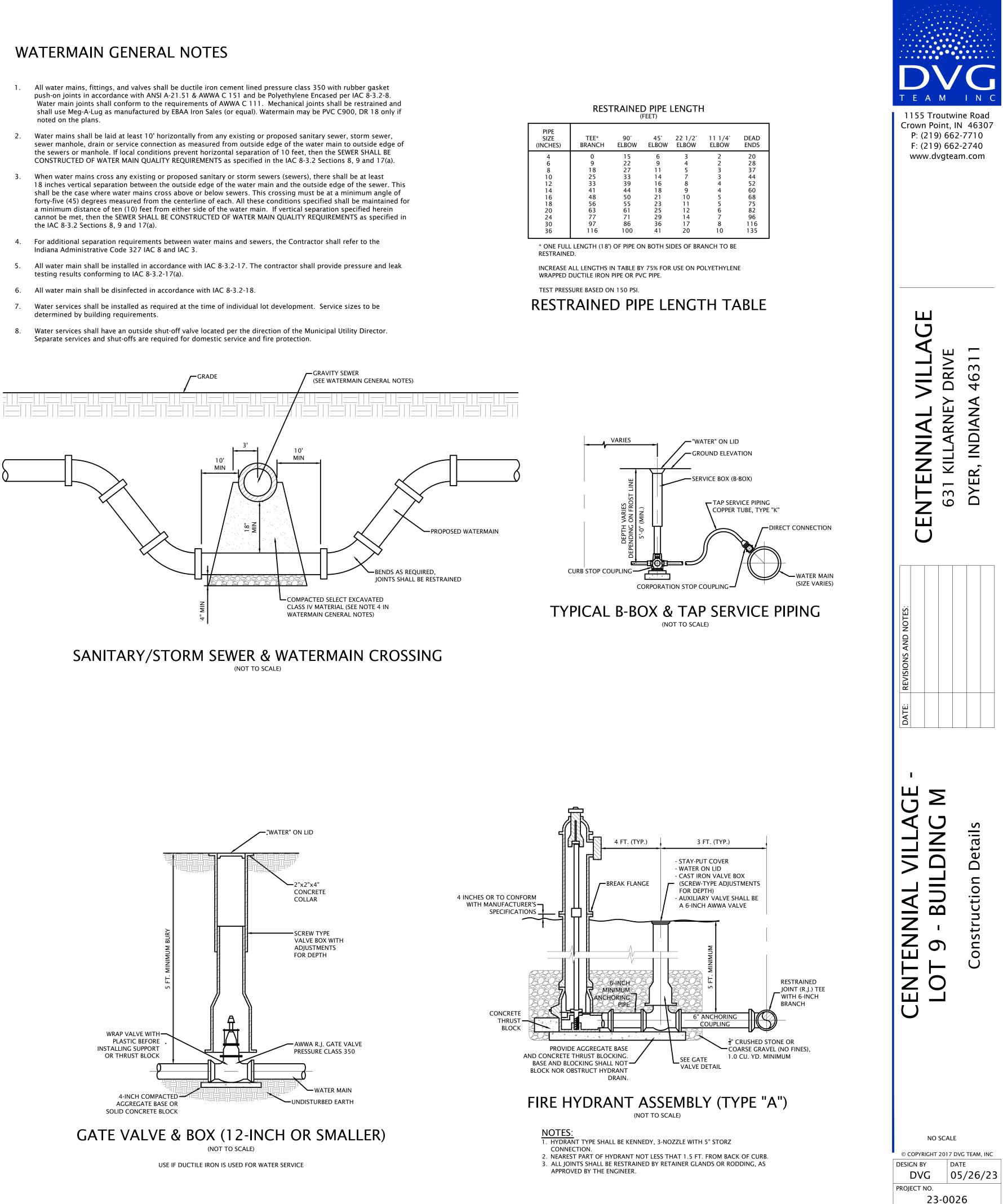


- LESS THAN 5 FT., USE FLAT TOP MANHOLE TYPE IN

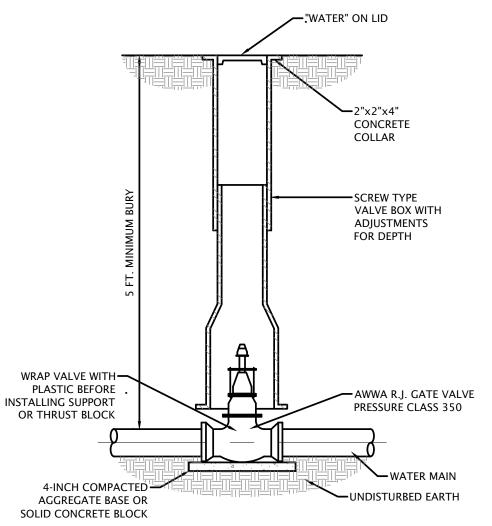
- 5. CONTRACT UNIT PRICE FOR STRUCTURES SHALL INCLUDE THE FRAME AND GRATE SPECIFED.
- ** FOR PIPE SIZES RANGING FROM 8" TO 30" IN DIAMETER

SANITARY SEWER MANHOLE

- 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 and be Polyethylene Encased per IAC 8-3.2-8. noted on the plans.
- Water mains shall be laid at least 10' horizontally from any existing or proposed sanitary sewer, storm sewer, 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).
- 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 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
- For additional separation requirements between water mains and sewers, the Contractor shall refer to the
- testing results conforming to IAC 8-3.2-17(a).
- determined by building requirements.

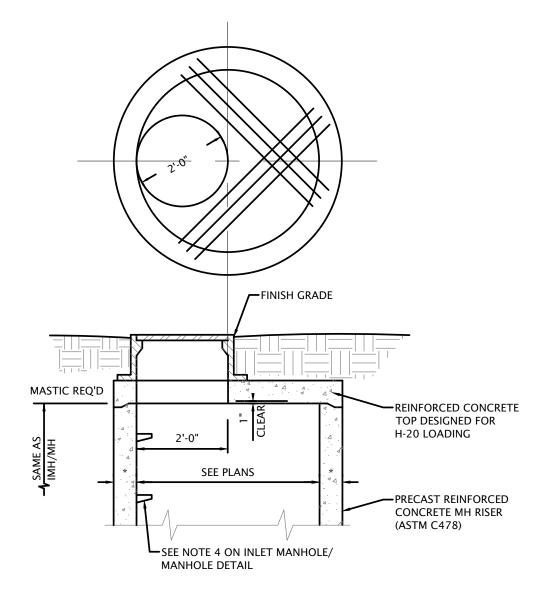


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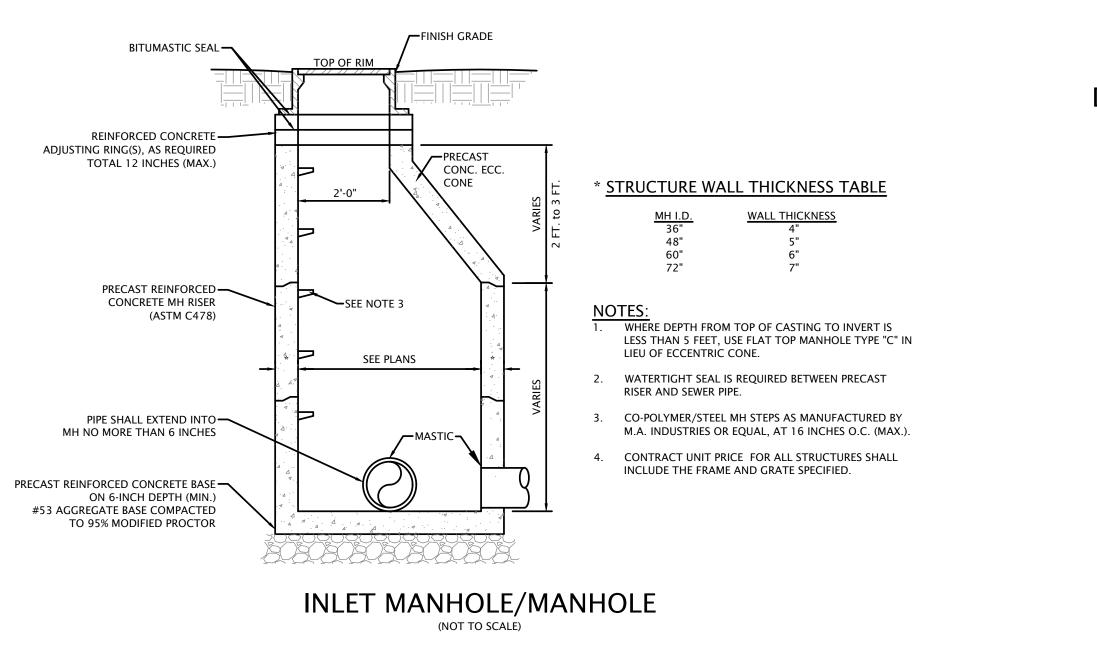
STORM SEWER GENERAL NOTES

- 1. Footing drains, sump pump drains and outside drains shall discharge to the storm sewer where storm sewer is provided.
- 2. The maximum allowable rate of infiltration or exfiltration shall not exceed 100 gallons, per 24 hours per inch-diameter per mile of sewer pipe.
- 3. Storm sewers shall be as noted on the plans. If approved by the Engineer, an alternative storm sewer pipe 12 inches and larger can be reinforced concrete minimum Class III, wall B conforming to ASTM C-76; Corrugated High-Density Polyethylene Pipe with smooth interior (ADS N-12) conforming to AASHTO M-294; Corrugated Polypropylene Pipe with smooth interior conforming to AASHTO M-330 (ADS HP STORM); Corrugated High-Density Polyethylene Pipe with smooth interior (PRINSCO, GOLDFLO) conforming to AASHTO M-294 or other INDOT, Type 2 storm sewers as approved by the Engineer.
- 4. All HDPE storm sewer pipe shall be tested with a mandrel. Maximum deflection shall meet ASTM C1244-93 and Standard Test Method for Concrete Sewer Manholes 30 days after backfill, and should be performed without the aid of a mechanical pulling device. The deflection testing shall meet all requirements of IDEM section 327 IAC 3-6-19(a) (b) (c).

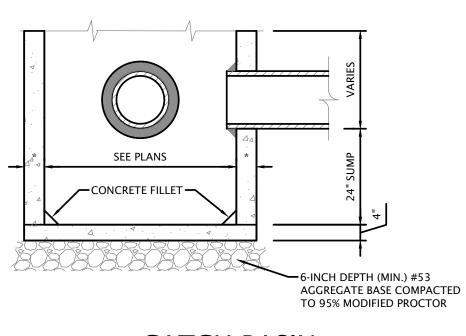


MANHOLE TOP (FLAT TOP) (NOT TO SCALE)

USE WHERE RESTRICTED HEAD ROOM WILL NOT ALLOW FOR TAPERED WALLS

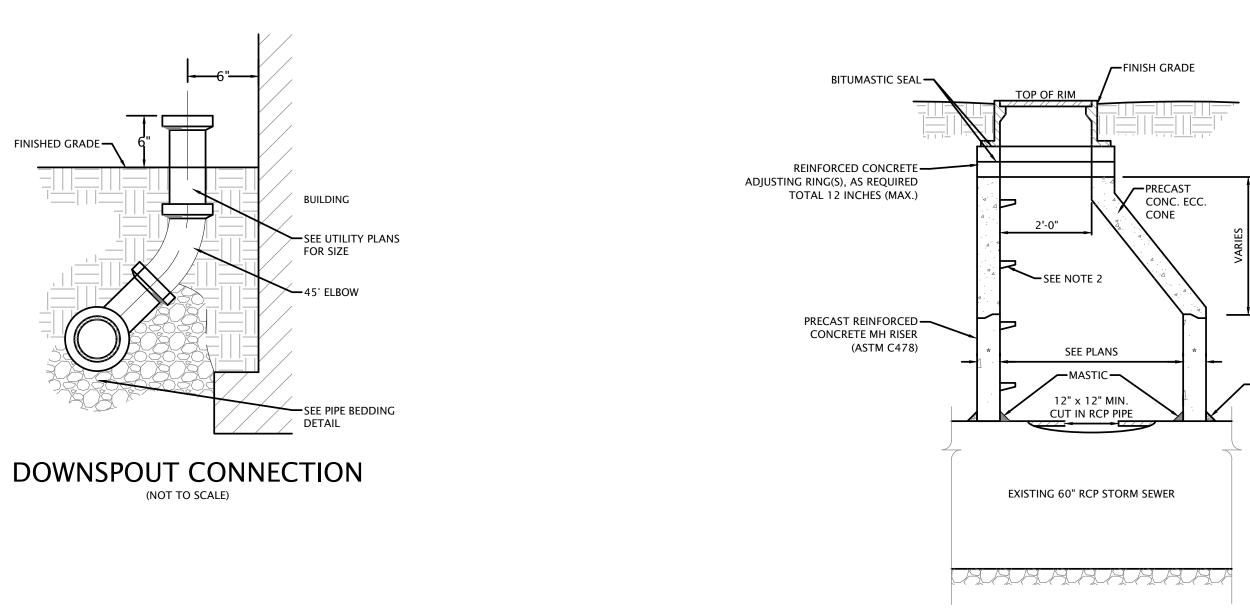


INLET MANHOLE (IMH) USES AN OPED LID - SEE STORM CALLOUT FOR FRAME & LID TYPE MANHOLE (MH) USES A CLOSED LID - SEE STORM CALLOUT FOR FRAME & LID TYPE.

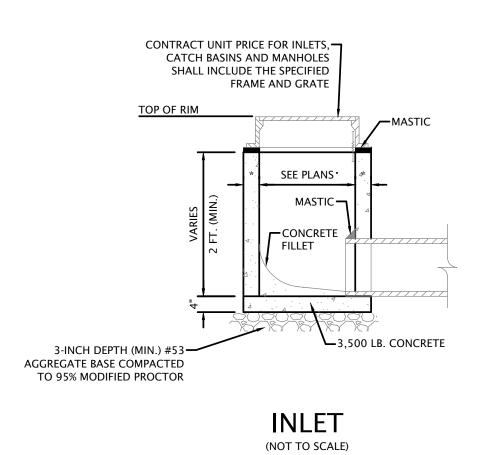


CATCH BASIN (NOT TO SCALE)

SEE INLET MANHOLE/MANHOLE DETAIL CATCH BASIN USES EITHER CLOSED OR OPEN LIDS - SEE UTILITY PLAN FOR FRAME & LID TYPE.



INLET MANHOLE ON PIPE (NOT TO SCALE)

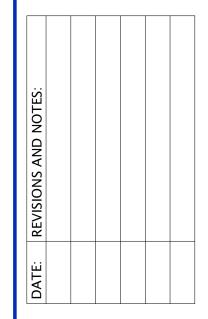


INLET USES OPEN LIDS - SEE UTILITY PLAN FOR FRAME & LID TYPE.



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Details

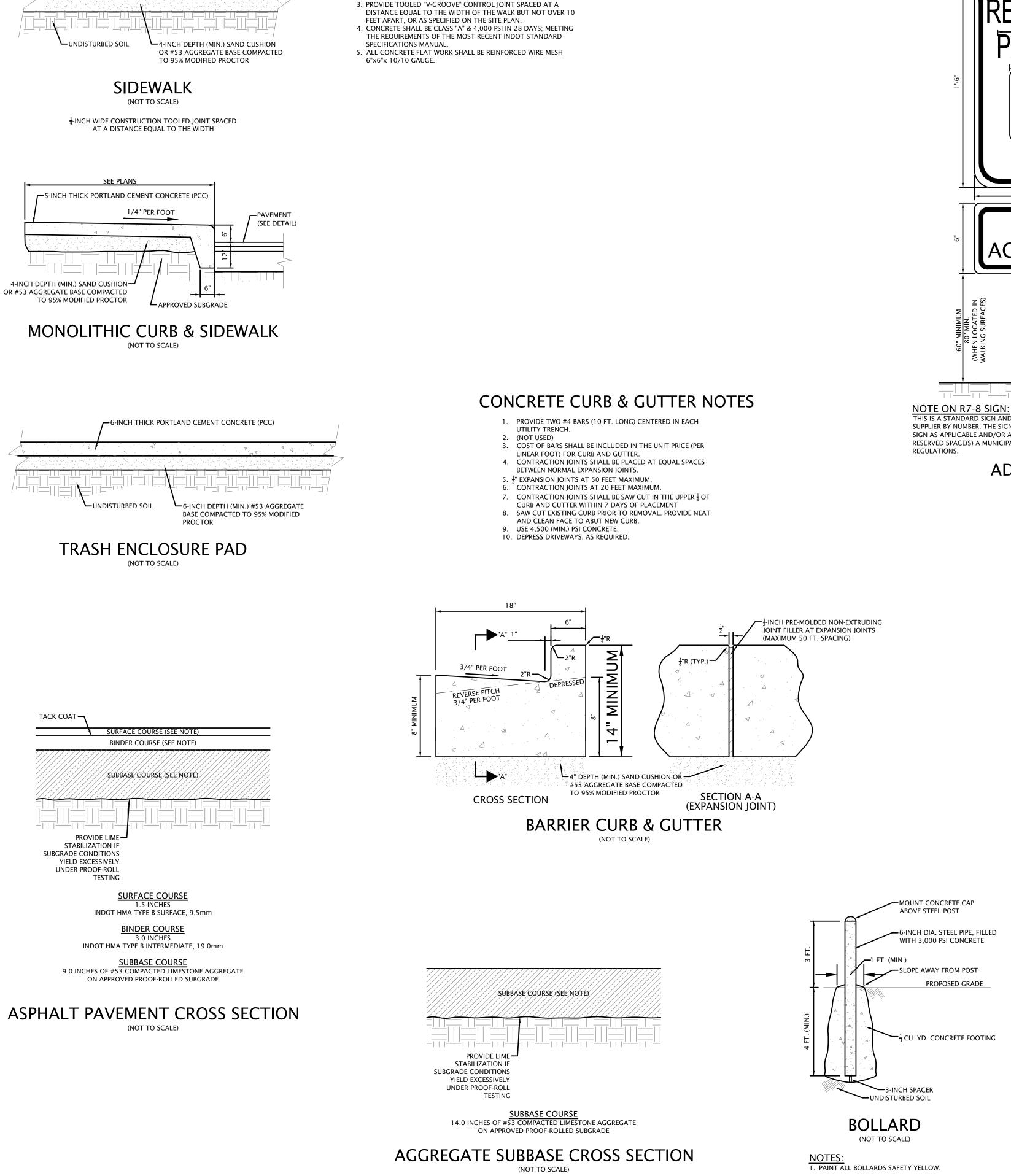
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	2	STRUCTURE WALL THICKNESS TABLE
2 FT. to 3		MH I.D. WALL THICKNESS 36" 4" 48" 5" 60" 6" 72" 7"
— GR	OUT	NOTES: 1. WHERE DEPTH FROM TOP OF CASTING TO INVERT IS LESS THAN 5 FEET, USE FLAT TOP MANHOLE TYPE "C" IN LIEU OF ECCENTRIC CONE.
		2. CO-POLYMER/STEEL MH STEPS AS MANUFACTURED BY M.A. INDUSTRIES OR EQUAL, AT 16 INCHES O.C. (MAX.).
		3. CONTRACT UNIT PRICE FOR ALL STRUCTURES SHALL INCLUDE THE FRAME AND GRATE SPECIFIED.



CONCRETE FLAT WORK NOTES:

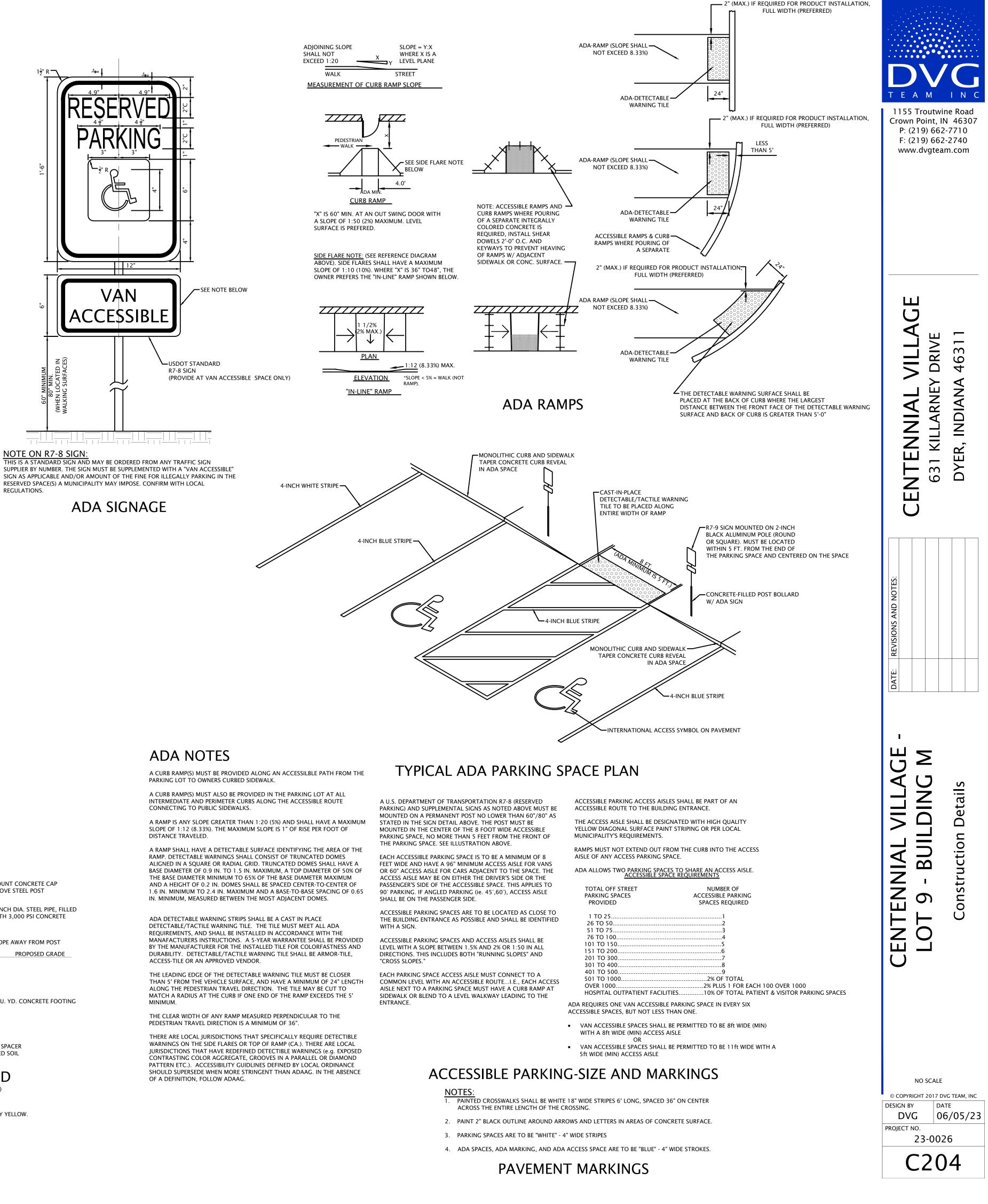
. PROVIDE ³/₄-INCH EXPANSION JOINT CONFORMING TO ASTM D-175

THE SIDEWALK AT INTERVALS NOT TO EXCEED 40 FEET. 2. EXTEND EXPANSION JOINT MATERIAL FULL DEPTH OF THE SLAB.

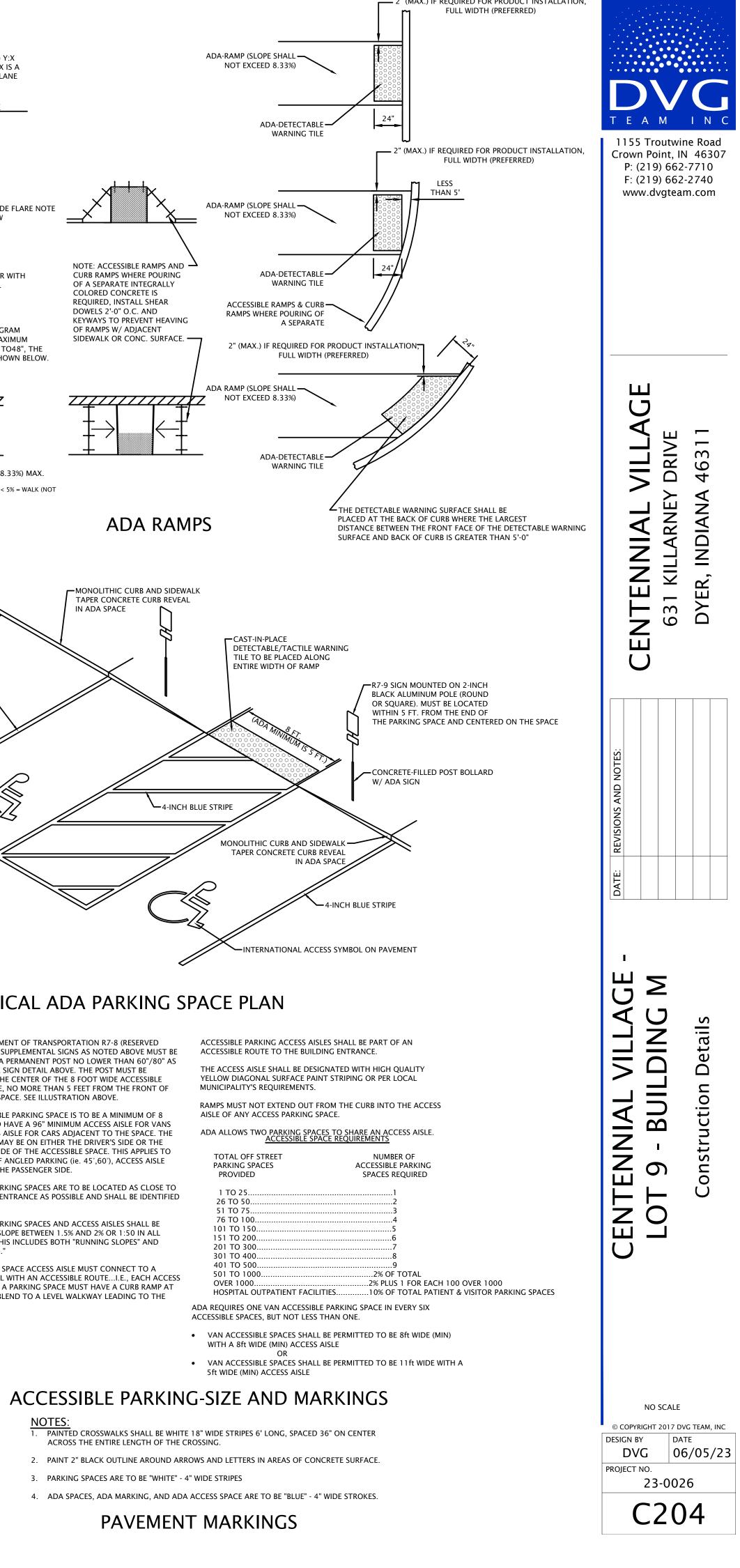
ALONG BACK OF CURBS, DRIVEWAYS, STEPS, WALLS AND ACROSS

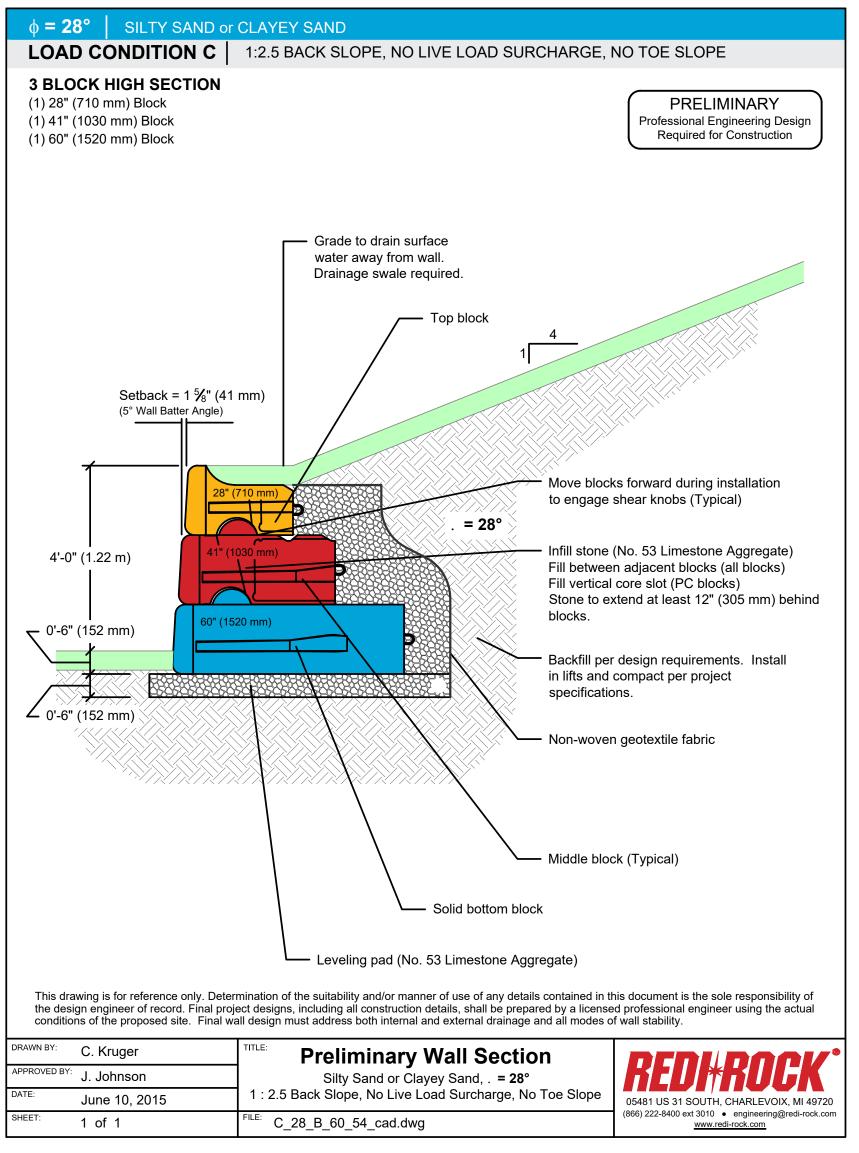
-5-INCH THICK PORTLAND CEMENT CONCRETE (PCC)

-EXPANSION JOINT



SIGN AS APPLICABLE AND/OR AMOUNT OF THE FINE FOR ILLEGALLY PARKING IN THE RESERVED SPACE(S) A MUNICIPALITY MAY IMPOSE. CONFIRM WITH LOCAL





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NOTES:

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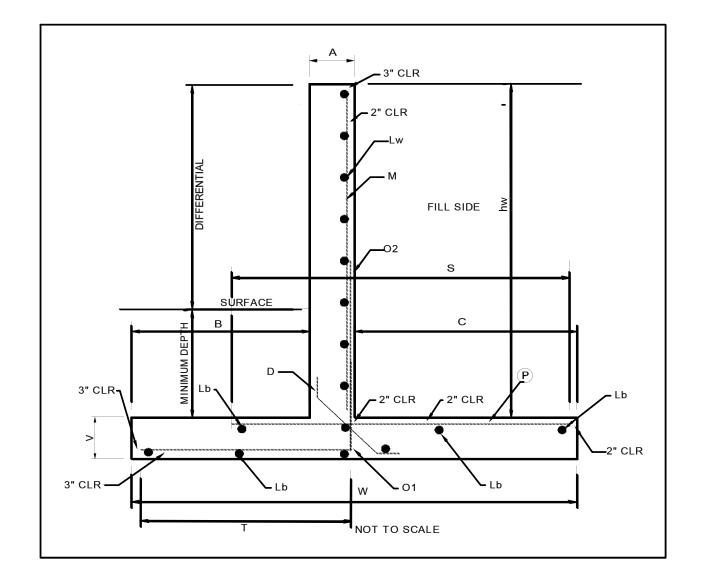
1. CONTRACTOR SHALL PROVIDE ALTERNATE RETAINING WALL PRICING UTILIZING REDI-ROCK WALL.

2. THE CONTRACTOR SHALL CONTACT THE REDI-ROCK REPRESENTATIVE FOR DESIGN DETAILS OF THE WALL. MATERIAL COLOR & TYPE SHALL BE SELECTED BY THE OWNER.

REDI-ROCK REP: MARK GORCZYCA MINNICK SERVICES (260) 494-7534 MARKG@MINNICKSERVICES.COM

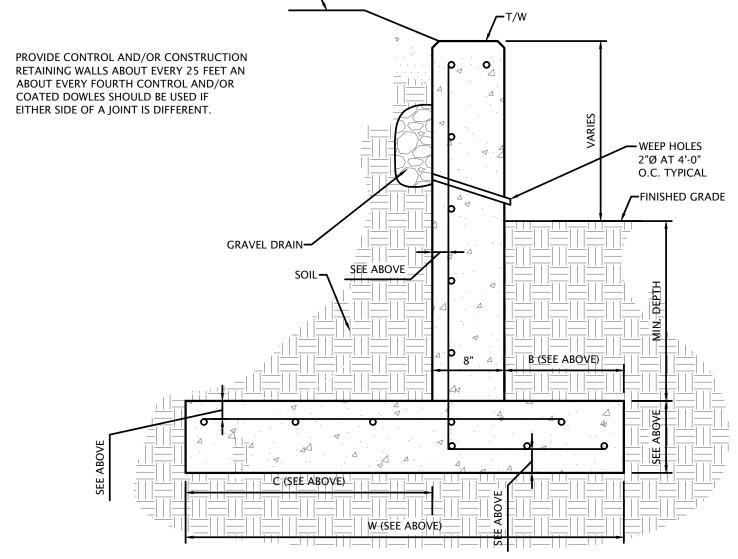
RETAINING WALL DETAIL (ALTERNATE)

	RETAINING WALL DESIGN - SIZE OF WALL										
DIFFER.	hw	А	В	С	w	S	т	v	Y-VARIES	U	х
0-2.0	2'-6"-4'-6"	8"	1'-3"	1'-8''	3'-7"	3'-2"	1'-6"	1'-0"	3'-0''-4'-11''	NOT USED	NOT USED
2.1-3.7	4'-7"-6'-3"	8"	1'-8"	3'-0"	5'-4''	4'-11"	1'-11"	1'-0"	6'-1''-6'-9''	NOT USED	NOT USED
4.0	8'-3"	8"	2'-0''	3'-6"	6'-2"	5'-7"	2'-3"	1'-0"	8'-9"	NOT USED	NOT USED

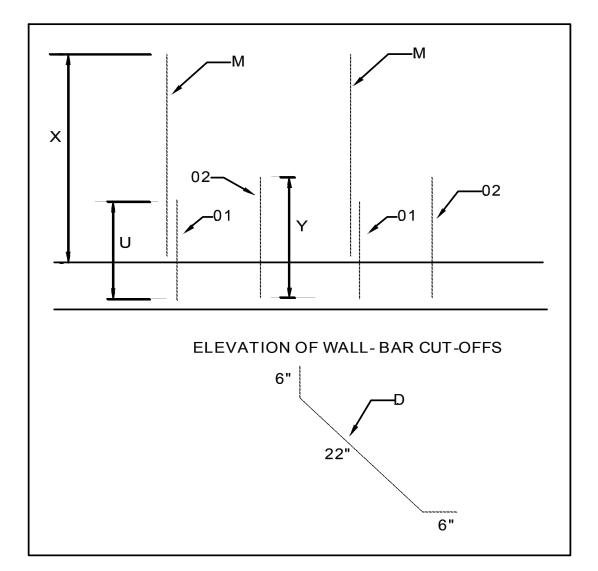


PROVIDE CONTROL AND/OR CONSTRUCTION RETAINING WALLS ABOUT EVERY 25 FEET AN ABOUT EVERY FOURTH CONTROL AND/OR

CONCRETE SIDEWALK/GRASS



RET	RETAINING WALL DESIGN - REINFORCEMENT							
	Lb	02	D	Lw	Р	01	м	
0-2.0	5-#4	#4@9"*	#4@9"	#4@12"	#4@9"	NOT USED	NOT USED	
2.1-3.7	7-#4	#4@9"	#4@9"	#4@12"	#4@9"	NOT USED	NOT USED	
4.0	8-#4	#6@9"	#5@9"	#4@12"	#6@18"	NOT USED	NOT USED	
	*HOOKED AT BASE							



RETAINING WALL DETAIL (NOT TO SCALE)

	CENTENNIAI	631 KILLARN	DYFR INDIAN	
DATE: REVISIONS AND NOTES:				
CENTENNIAL VILLAGE -			Construction Details	_

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GENERAL STORM WATER 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 [MUNICIPALITY] 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 responsibile 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 responsibile for compliance with the S.W.P.P.P. Any fines or punative 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.

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.

MATERIAL HANDLING AND STORAGE

Concrete Washout

- Concrete wastewater liquid shall be fully evaporated prior to the planned capacity of the washout structure capacity being exceeded. Liquid must be disposed of offsite as wastewater.
- Concrete wastewater liquid that has not solidified may be pumped out into a secondary lined container or into a tanker and taken to an approved disposal facility. • Concrete wastewater shall not be allowed to leak onto the ground, run into storm drains, or into any body of water. Where
- washout wastewater leaks onto the ground, all contaminated soils shall be excavated and disposed of properly Allow concrete wastes to set. Break up and properly dispose of hardened wastes. Upon removal of waste, inspect the structure.
- Do not wash sweepings from exposed aggregate concrete into the street or storm drain. Collect and return sweepings to aggregate base stockpile or dispose of in the trash. • Do not dump excess concrete onsite, except in designated areas.
- When concrete washout areas are no longer required, close the concrete washout systems. Dispose of all hardened concrete and other materials used to construct the system. Backfill, grade, and stabilize any holes, depressions, and other land disturbances associated with the system

SOLID WASTE MANAGEMENT

- Select designated waste collection areas onsite.
- Inspect dumpsters for leaks and repair any dumpster that is not watertight.
- Dumpsters of sufficient size and number should be provided to contain the solid waste generated by the project. Provide containers with lids or covers that can be placed over the container to keep rain out or to prevent loss of wastes when it is windv
- Full dumpsters should be removed from the project site and the contents should be disposed of by the trash hauling contractor. • Plan for additional containers and more frequent pickup during the demolition phase of construction.
- Collect site trash daily, especially during rainy and windy conditions.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- Do not hose out dumpsters on the construction site. Leave dumpster cleaning to the trash hauling contractor.
- Arrange for regular waste collection before containers overflow. Clean up immediately if a container does spill.
- Make sure that construction waste is collected, removed, and disposed of only at authorized disposal areas. • Litter from work areas within the construction limits of the project site should be collected and placed in watertight dumpsters at least weekly, regardless of whether the litter was generated by the contractor, the public, or others. Collected litter and debris should

not be placed in or next to drain inlets, stormwater drainage systems, or watercourses. • Construction debris and waste should be removed from the site biweekly or more frequently as needed.

- Construction material visible to the public should be stored or stacked in an orderly manner.
- Stormwater run-on should be prevented from contacting stored solid waste through the use of berms, dikes, or other temporary
- diversion structures or through the use of measure to elevate waste from site surfaces. • Solid waste storage areas should be located at least 50 ft. from drainage facilities and watercourses and should not be located
- in area prone to flooding or ponding. Inspect construction waste area weekly.

CHEMICALS AND LIQUIDS STORAGE AND HANDLING

- Store materials in manufacturer's containers.
- Maintain Safety Data Sheets (SDS) on all products
- Store materials in a weatherproof/vandal resistant locker or building. Keep materials away from flammable sources.
- Follow manufacturer's instructions for the proper use and storage of all materials. • Do not perform washing of applicators or containers of solvent, paint, grout, stucco, or other materials near or into a waterway
- or stormwater inlet. Wash water is to be disposed offsite as wastewater
- Tightly seal and store paint containers and curing compounds when not required for use. • Do not discharge excess paint to a waterway or storm system. Properly dispose of excess paint according to the manufacturer's
- instructions and in accordance with all Federal, State, and local regulations. • Provide secondary containment for aboveground storage tanks or storage areas containing hazardous materials that are located
- outside. • Remove collected liquid in the secondary containment area within 72 hours of its discovery to maintain the capacity.

Fertilizers

- Apply fertilizers only in the minimum amounts recommended by the manufacturer, as indicated from a soil test, or per the Indiana Stormwater Quality Manual.
- Work fertilizers into the soil to limit exposure to stormwater. • Do not apply immediately prior to precipitation events.
- Store fertilizers in a covered area and transfer partially used bags to a sealable container to avoid spills.

Equipment and Vehicle Washing

- As feasible, perform washing offsite in a covered facility with an impervious floor and drains connected to the sanitary sewer.
- Use a dedicated site for washing. Locate wash areas at least 50 feet from stormwater inlets or water bodies. • Do not discharge wash water if using soaps, solvents, or detergents. Only non-contaminated wash water may be discharged to stormwater
- Inspect equipment and vehicles for leaks or worn hoses prior to washing. Properly dispose of contaminated wash water.

• Establish connection between new storm sewer and existing storm sewer.

the storm sewer system is installed.

- Install underground utilities.
- control blankets shall be installed on slide slopes as shown on the plans.

• Install pipe outlet/outfall from storm water pond to roadside ditch.

• Perform mass grading of the site subgrade.

- completion of disturbance.
- Grade site to final elevations.
- Install curb and sidewalk.
- Construct asphalt.
- Install permanent seeding or sod.

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

CONSTRUCTION SITE STORMWATER RUNOFF 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.

• Site Clearing/demolition activities.

Installation of underground utilities.

• Installation of curb and sidewalk.

Construction of asphalt.

Permanent seeding/sod.

around the base.

Construction of dry-bottom storm water pond.

• Topsoil removal and stockpiling.

Mass grading.

Final grading.

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.

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

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

GENERAL CONSTRUCTION SEQUENCE

• Installation/implementation of storm water quality measures

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

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

STORMWATER QUALITY CONSTRUCTION SEQUENCE

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

• Post signed CSGP NOI, NPDES Permit number, CSGP NOS (when available), contact information for the site, municipal stormwater permit, and location where construction plans may be obtained in a visible location at entrance to site.

Construct gravel construction entrance from the street to the building pad prior to construction.

• Install silt fence/fiber rolls prior to construction at construction limits.

Construct refueling area and concrete washout area prior to construction.

Install inlet protection at all inlets on property.

• Perform topsoil removal and stockpiling. Soil stockpiles created on site to be protected from erosion with silt fence

Construct dry-bottom storm water pond to help provide the required storage needed to capture and treat storm water

• Establish permanent seeding on banks of pond to prevent the banks from degrading.

• Construct diversion swales where required/shown to divert large amounts of runoff area to the storm water pond until

• Establish temporary seeding of diversion swales.

• Upon completion of the rough grading, all areas affected by construction shall be temporarily seeded if they will remain dormant for greater than 7 days. These areas shall be stabilized within 14 days of remaining dormant and erosion

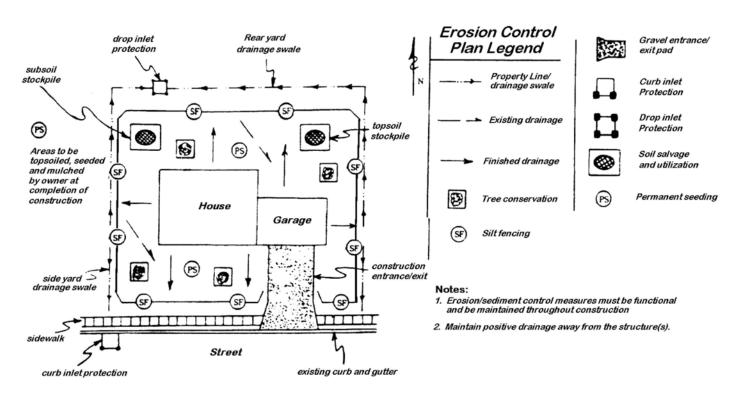
• Re-seed any areas disturbed by construction and utilities installation with temporary seed mix within 3 days of

• Maintain temporary erosion control features until construction is complete.

• Remove temporary erosion control measures once permanent vegetative cover has been established.

• Submit the the Notice of Termination for the Construction Stormwater General (CSGP) permit.

SAMPLE EROSION/SEDIMENT CONTROL PRACTICE PLAN FOR A TYPICAL ONE OR TWO FAMILY DWELLING UNDER CONSTRUCTION



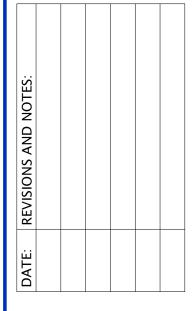
POST-CONSTRUCTION STORMWATER MANAGEMENT PLAN

- 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 a detention pond system and green space to control the pollutants that occur after construction activities conclude.
- The post-construction stormwater guality 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 restrictors in the outfall pipes constructed as part of these engineering plans. The stormwater quality measures 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.
- 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.
- Trees
- Native re-vegetation
- Pre-cast Storm Drain Covers
- Grass swales Grass swales should receive routine fertilizing, watering, mowing and trimming to maintain a healthy landscape



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DVG Team 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 Team 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.

EROSION CONTROL MEASURES

CHEMICAL STABILIZATION

SOFT PIABLE MATTING SUCH AS JUTE, COIR OR BURLAP, APPLIED POLYMER SYSTEMS, "SILT STOP" DRY POWER (OR APPROVED MATERIAL: EOUAL).

"SILT STOP" DRY POWDER IS A SOIL-SPECIFIC MATERIAL. A SOIL SAMPLE MUST BE SUBMITTED TO THE MANUFACTURER TO COVERAGE: DETERMINE PROPER APPLICATION RATES.

INSTALLATION: 1. PREPARE THE SITE BY FILLING IN GULLIES, RILLS AND LOW SPOTS.

- APPLY "SILT STOP" POWER (DRY) OVER DRY GROUND WITH A SEED/FERTILIZER SPREADER. SELECT THE TYPE AND WEIGHT OF EROSION CONTROL BLANKET TO FIT THE SITE CONDITIONS (e.g. SLOPE, CHANNEL
- AND FLOW VELOCITY). MAINTENANCE
- DURING VEGETATIVE ESTABLISHMENT, INSPECT AFTER STORM EVENTS FOR ANY EROSION. IF ANY AREA SHOWS EROSION, REPAIR THE GRADE AND RE-APPLY "SILT STOP" POWDER AND RE-LAY AND STAPLE
- THF BI ANKFT
- 3. AFTER VEGETATIVE ESTABLISHMENT, CHECK THE TREATED AREA PERIODICALLY.

GEOTEXTILES

NORTH AMERICAN GREEN - SC 150 or DS 150 BLANKET MATERIAL: SC 150 WHEN PLACEMENT OCCURS IN THE FALL/WINTER AND WHEN DURABILITY IS REQUIRED DS 150 DEGRADES MORE RAPIDLY, ALLOWING FOR SOONER MOWING OF THE STABILIZED AREA

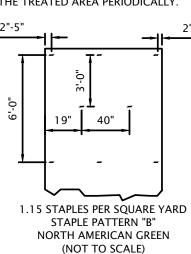
EROSION CONTROL BLANKET (SURFACE-APPLIED)

STAPLES AS RECOMMENDED BY THE MANUFACTURER. FOR NORTH AMERICAN GREEN, USE STAPLE PATTERN "B". SEE CHART ANCHORING: BELOW

- INSTALLATION: 1. SELECT THE TYPE AND WEIGHT OF EROSION CONTROL BLANKET TO FIT THE SITE CONDITIONS (e.g. SLOPE, CHANNEL
- FLOW VELOCITY) INSTALL ANY PRACTICES NEEDED TO CONTROL EROSION AND RUNOFF, SUCH AS TEMPORARY OR PERMANENT
- DIVERSION, SEDIMENT BASIN OR TRAP. SILT FENCE, AND/OR STRAW BALE DAM. GRADE THE SITE AS SPECIFIED IN THE CONSTRUCTION PLAN.
- ADD TOPSOIL WHERE APPROPRIATE.
- PREPARE THE SEEDBED. FERTILIZE (AND LIME IF NEEDED) AND SEED THE AREA IMMEDIATELY AFTER GRADING. FOLLOW MANUFACTURER'S DIRECTIONS AND 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 INCHES
- 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 DURING VEGETATIVE ESTABLISHMENT, INSPECT AFTER STORM EVENTS FOR ANY EROSION BELOW THE BLANKET.

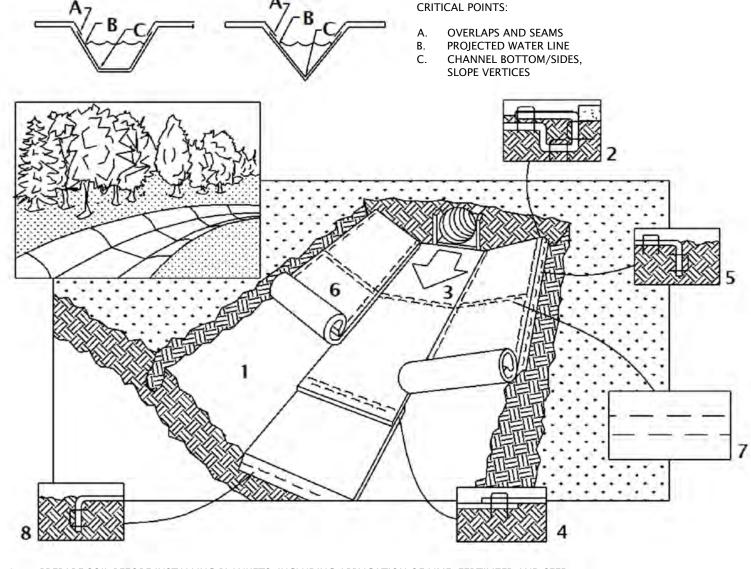
- IF ANY AREA SHOWS EROSION, PULL BACK THAT PORTION OF THE BLANKET COVERING IT, ADD SOIL, RE-SEED THE
- AREA, AND RE-LAY AND STAPLE THE BLANKET. 3. AFTER VEGETATIVE ESTABLISHMENT, CHECK THE TREATED AREA PERIODICALLY



EROSION CONTROL BLANKET (CHANNEL APPLICATION)

DETAIL SOURCE: NORTH AMERICAN GREEN

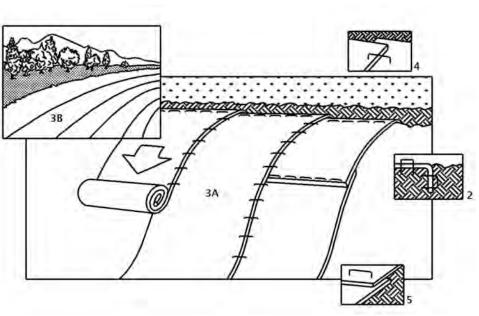
NOTE: HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE. REFER TO GENERAL STAPLE PATTERN GUIDE FOR CORRECT STAPLE RECOMMENDATIONS FOR CHANNELS.



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

EROSION CONTROL BLANKET (SIDE SLOPE APPLICATION)

DETAIL SOURCE: NORTH AMERICAN GREEN



REFER TO GENERAL STAPLE PATTERN GUIDE FOR CORRECT STAPLE RECOMMENDATIONS FOR CHANNELS. NOTE: DIRECTIONS

- CELL-O-SEED, DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
- COMPACT THE TRENCH AFTER STAPLING
- ROLL THE BLANKETS DOWN OR HORIZONTALLY ACROSS THE SLOPE. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH AN APPROXIMATELY 2-INCH OVERLAP.
- WHEN BLANKETS MUST BE SPLICED DOWN THE SLOPE, PLACE BLANKETS END OVER END (SHINGLE-STYLE) WITH AN

RIP RAP AT PIPE OUTLET

MATERIAL:	HARD, ANGULAR AND WEATHER-RESISTANT,
GRADATION:	WELL-GRADED STONE, 50% (BY WEIGHT LARG
	EXCEED TWO TIMES THE SPECIFIED d50 AND
	INCHES.
FILTER:	USE GEOTEXTILE FABRIC FOR STABILIZATION
	RAP INSTALLATIONS.
SLOPE:	2:1 OR FLATTER, UNLESS APPROVED IN THE E
SUBGRADE PREP	ARATION

- REMOVE BRUSH, TREES, STUMPS AND OTHER DEBRIS. EXCAVATE ONLY DEEP ENOUGH FOR BOTH FILTER AND RIP RAP. OVER-EXCAVATION INCREASES THE AMOUNT OF
- SPOIL CONSIDERABLY COMPACT ANY FILL MATERIAL TO THE DENSITY OF THE SURROUNDING UNDISTURBED SOIL SMOOTH THE GRADED FOUNDATION.

FILTER PLACEMENT

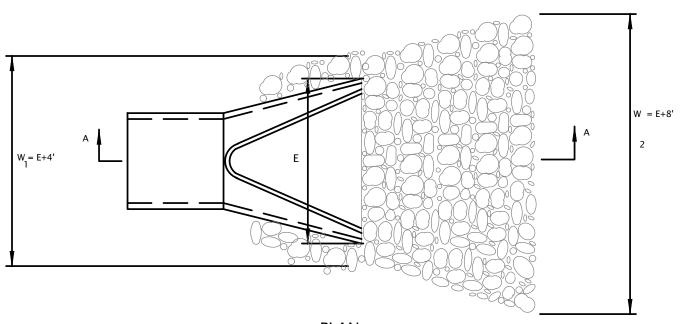
1. IF USING GEOTEXTILE FABRIC, PLACE IT ON THE SMOOTHED FOUNDATION, OVERLAP THE EDGES AT LEAST 12 INCHES AND SECURE WITH ANCHOR PINS SPACED EVERY 3 FEET ALONG THE OVERLAP. 2. IF USING A SAND/GRAVEL FILTER, SPREAD THE WELL-GRADED AGGREGATE IN A UNIFORM LAYER TO THE REQUIRED FIRST AND AVOID MIXING THE LAYERS.

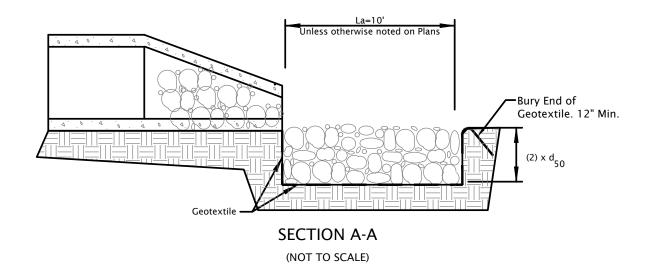
RIP RAP PLACEMENT

- 1. IMMEDIATELY AFTER INSTALLING THE FILTER, ADD THE RIP RAP TO FULL THICKNESS IN ONE OPERATION. DO NOT OR DAMAGE THE UNDERLYING FILTER MATERIAL
- 2. IF FABRIC IS DAMAGED, REMOVE THE RIP RAP AND REPAIR BY ADDING ANOTHER LAYER OF FABRIC, OVERLAPPING THE DAMAGED AREA BY 12 INCHES
- QUARRY AND SOME HAND PLACEMENT MAY BE NEEDED TO ENSURE AN EVEN DISTRIBUTION OF ROCK MATERIAL.

MAINTENANCE

INSPECT PERIODICALLY FOR DISPLACED ROCK MATERIAL, SLUMPING AND EROSION AT EDGES, ESPECIALLY DOWN-STREAM OR DOWN-SLOPE.





PREPARE SOIL BEFORE INSTALLING BLANKETS INCLUDING APPLICATION OF LIME, FERTILIZER AND SEED. WHEN USING BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET 6-INCHEDEEP BY 6-INCH WIDE TRENCH. BACKFILL AND

APPROXIMATELY 4-INCH OVERLAP. STAPLE THROUGH OVERLAPPED AREA. APPROXIMATELY 12 INCHES APART.

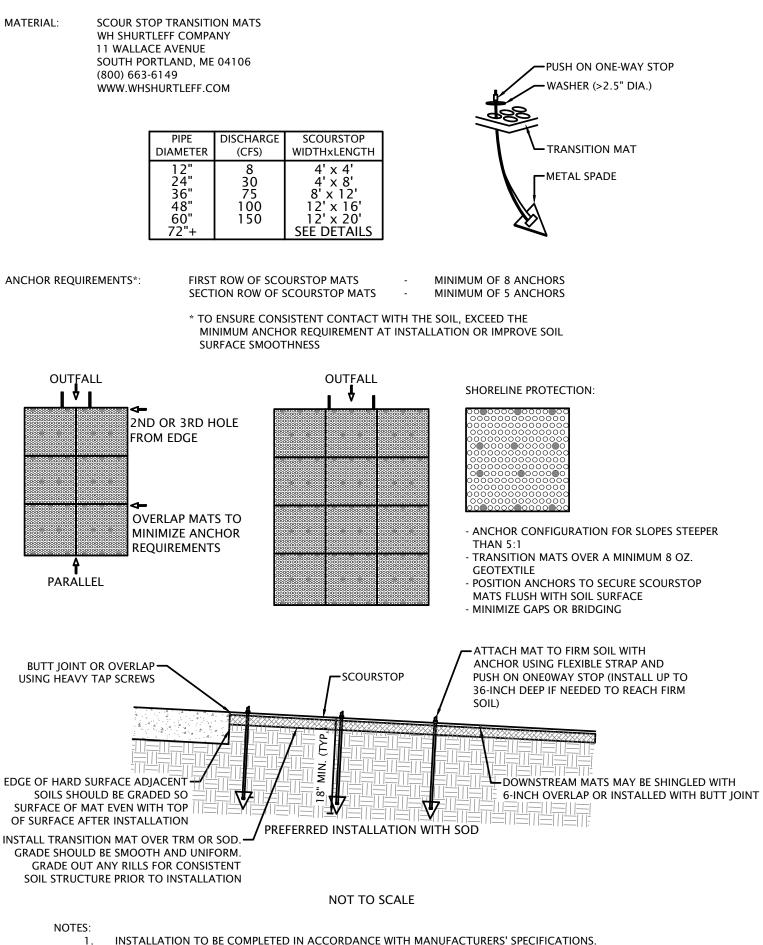
HAVING A SPECIFIC GRAVITY OF AT LEAST 2.5 GER THAN THE SPECIFIED d50; HOWEVER, THE LARGEST PIECES SHOULD NOT NO MORE THAN 15% OF THE PIECES (BY WEIGHT) SHOULD BE LESS THAN 3 AND FILTRATION OR SAND/GRAVEL LAYER PLACED UNDER ALL PERMANENT RIP EROSION AND SEDIMENT CONTROL PLAN

THICKNESS (6 INCHES MINIMUM); IF TWO OR MORE LAYERS ARE SPECIFIED, PLACE THE LAYER OF SMALLER GRADATION

DUMP THROUGH CHUTES OR USE ANY METHOD THAT CAUSES SEGREGATION OF ROCK SIZES OR THAT WILL DISLODGE PLACE SMALLER ROCK IN VOIDS TO FORM A DENSE, UNIFORM AND WELL-GRADED MASS. SELECTIVE LOADING AT THE BLEND THE ROCK SURFACE SMOOTHLY WITH THE SURROUNDING AREA TO ELIMINATE PROTRUSIONS OR OVER-FALLS

PLAN (NOT TO SCALE)

SCOURSTOP TRANSITION MAT FOR SCOUR PROTECTION



RIP-RAP FOR SCOUR PROTECTION

DO NOT SCALE DRAWINGS

HARD, ANGULAR AND WEATHER-RESISTANT, HAVING A SPECIFIC GRAVITY OF AT LEAST 2.5 WELL-GRADED STONE, 50% (BY WEIGHT LARGER THAN THE SPECIFIED d50; HOWEVER, THE LARGEST PIECES SHOULD NOT EXCEED TWO TIMES THE SPECIFIED d50 AND NO MORE THAN 15% OF THE PIECES (BY WEIGHT) SHOULD BE LESS THAN 3 INCHES USE GEOTEXTILE FABRIC FOR STABILIZATION AND FILTRATION OR SAND/GRAVEL LAYER PLACED UNDER ALL PERMANENT RIP RAP INSTALLATIONS.

SLOPE: MINIMUM THICKNESS: TWO TIMES THE SPECIFIED d50 STONE DIAMETER.

MATERIAL

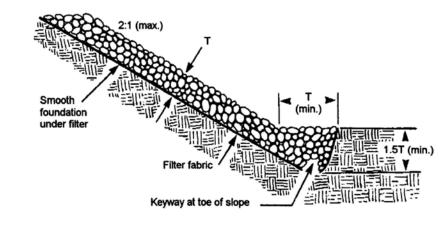
FILTER:

GRADATION:

SUBGRADE PREPARATION

- REMOVE BRUSH, TREES, STUMPS AND OTHER DEBRIS.
- EXCAVATE ONLY DEEP ENOUGH FOR BOTH FILTER AND RIP RAP. OVER-EXCAVATION INCREASES THE AMOUNT OF SPOIL CONSIDERABLY
- COMPACT ANY FILL MATERIAL TO THE DENSITY OF THE SURROUNDING UNDISTURBED SOIL. CUT KEYWAY IN STABLE MATERIAL AT THE BASE OF THE SLOPE TO REINFORCE TOE. KEYWAY DEPTH SHOULD BE 1.5 TIMES THE DESIGN THICKNESS OF THE RIP RAP AND SHOULD EXTEND A HORIZONTAL DISTANCE EQUAL TO THE DESIGN THICKNESS. SMOOTH THE GRADED FOUNDATION

2:1 OR FLATTER, UNLESS APPROVED IN THE EROSION AND SEDIMENT CONTROL PLAN.



FILTER PLACEMENT

- 1. IF USING GEOTEXTILE FABRIC, PLACE IT ON THE SMOOTHED FOUNDATION, OVERLAP THE EDGES AT LEAST 12 INCHES AND SECURE WITH ANCHOR PINS SPACED EVERY 3 FEET ALONG THE OVERLAP.
- 2. IF USING A SAND/GRAVEL FILTER, SPREAD THE WELL-GRADED AGGREGATE IN A UNIFORM LAYER TO THE REQUIRED THICKNESS (6 INCHES MINIMUM); IF TWO OR MORE LAYERS ARE SPECIFIED, PLACE THE LAYER OF SMALLER GRADATION FIRST AND AVOID MIXING THE LAYERS.

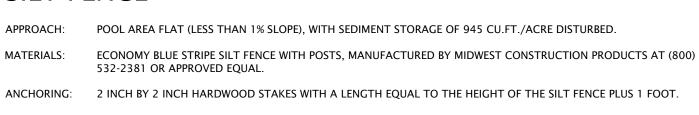
RIP RAP PLACEMENT

- IMMEDIATELY AFTER INSTALLING THE FILTER, ADD THE RIP RAP 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 RIP RAP AND REPAIR BY ADDING ANOTHER LAYER OF FABRIC, OVERLAPPING THE
- DAMAGED AREA BY 12 INCHES. 3. PLACE SMALLER ROCK IN VOIDS TO FORM A DENSE, UNIFORM AND 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

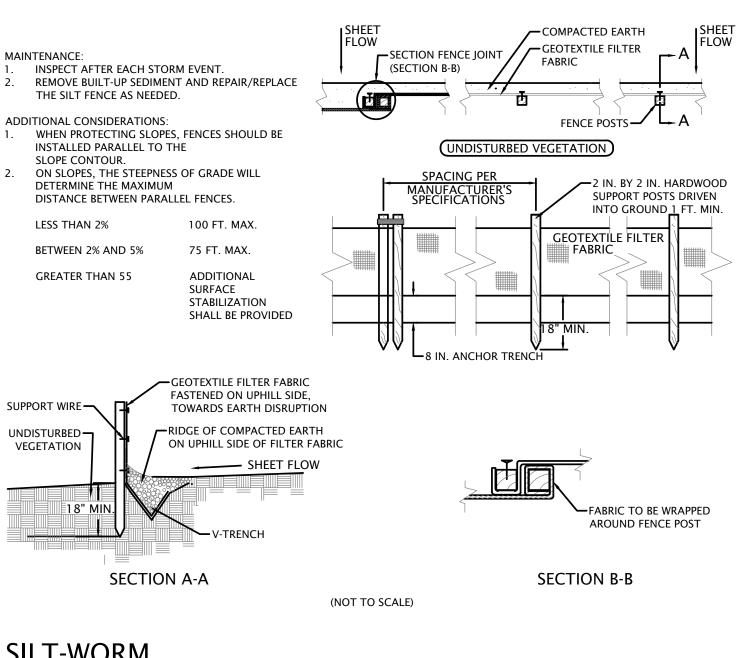
INSPECT PERIODICALLY FOR DISPLACED ROCK MATERIAL, SLUMPING AND EROSION AT EDGES, ESPECIALLY DOWN-STREAM OR DOWN-SLOPE.

SILT FENCE



INSTALLATION:

DRIVE STAKES 1 FT. (MINIMUM) INTO GROUND AND ATTACH FABRIC TO STAKES WITH STAPLER. BOTTOM OF FABRIC SHALL BE PLACED UNDER 6 INCHES COMPACTED SOIL TO PREVENT SEDIMENT FLOW UNDERNEATH THE FENCE. ENSURE THAT ALL SUPPORTING POSTS ARE ON THE DOWN SLOPE SIDE OF THE FENCING.



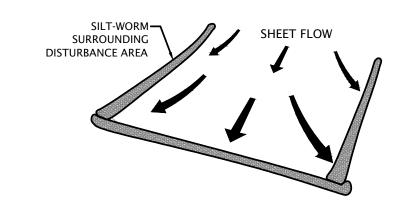
SILT-WORM

SILT-WORM OR APPROVED EQUAL MATERIAL

DIAMETER: 9 INCHES MINIMUM

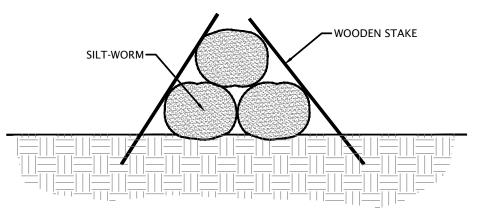
PERIMETER CONTROL

INSTALLATION PLACE SILT-WORM DIRECLY ON TOP OF GRADE FOR GRADES UNDER 12%. ARRANGE PERIMETER CONTROL IN A MANNER THAT IS APPLIED PERPENDICULAR TO SHEET FLOW. OVERLAP CONTIGUOUS SECTIONS OF SILT WORM AT A MINIMUM OF 6 INCHES.



STACKING

- INSTALLATION: PLACE SILT-WORM DIRECTLY ON TOP OF GRADE FOR GRADES UNDER 12%.
- STACK SILT-WORM IN A STAGGERED MANNER, AS SHOWN BELOW. OVERLAP CONTIGUOUS SECTIONS OF SILT-WORM AT A MINIMUM OF 6 INCHES



SLOPE INTERRUPTION / DITCH CHECK

INSTALLATION: PLACE SILT-WORM PERPENDICULAR TO SHEET FLOW AND CURL ENDS UP TOWARD TOP OF SLOPE. STAKE THE SILT-WORM EVERY 4 FEET AND OVERLAP THE ENDS BETWEEN 1 AND 2 FEET.



		/		
	SPACIN	IG FOR SLOPE APPLIC	CATION	
SLOPE	9-inch	12-inch	18-inch	24-inch
2% or less	70 ft.	80 ft.	N/A	N/A
5%	30 ft.	60 ft.	80 ft.	N/A
10%	20 ft.	30 ft.	70 ft.	80 ft.
6:1	N/A	20 ft.	40 ft.	55 ft.
4:1	N/A	20 ft.	30 ft.	30 ft.
3:1	N/A	N/A	20 ft.	25 ft.

SILT-WORM MAINTENANCE GUIDELINES

2:1

• INSPECT WITHIN 24 HOURS OF A RAIN EVENT AND AT LEAST ONCE EVERY 7 CALENDAR DAYS.

N/A

IF SILT-WORM TEARS, STARTS TO DECOMPOSE, OR IN ANY WAY BECOMES INEFFECTIVE, REPLACE THE AFFECTED PORTION IMMEDIATELY.

N/A

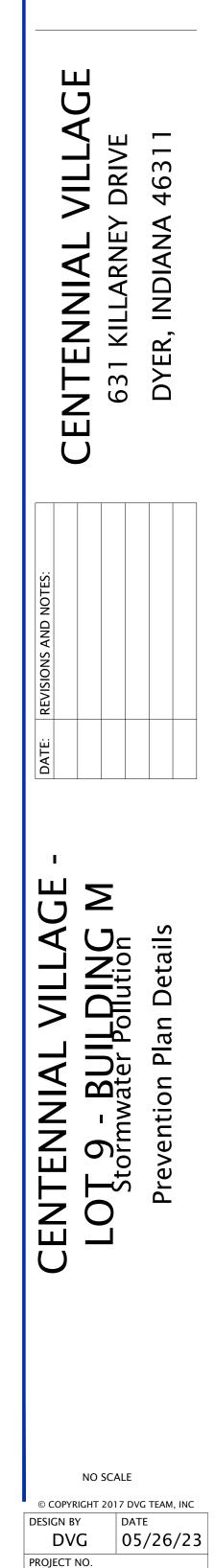
20 ft.

20 ft.

NOTE: ALL REPAIRS SHOULD MEET SPECIFICATIONS AS OUTLINED WITHIN THIS MEASURE. • REMOVE DEPOSITED SEDIMENT WHEN IT IS CAUSING THE SILT-WORM TO BULGE OR WHEN IT REACHES ONE-HALF THE HEIGHT OF THE SILT-WORM AT ITS LOWEST POINT. WHEN CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED, REMOVE THE SILT-WORM AND SEDIMENT DEPOSITS, GRADE THE SITE TO BLEND WITH THE SURROUNDING AREA, AND STABILIZE.



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EROSION CONTROL MEASURES (continued) MULCHING

MATERIAL:	STRAW, HAY, WOOD FIBER, CELLU OR EXCELSIOR OR EROSION CONTROL BLANKETS OR TURF REINFORCEMENT MATS,		N AND SEDIMENT CONTROL PLAN
COVERAGE:	AT LEAST 75% OF THE SOIL SURFA	ACE	
ANCHORING:	REQUIRED FOR STRAW OR HAY M	JLCH AND SOMETIMES EXCEL	SIOR TO PREVENT DISPLACEMENT BY WIND AND/OR WATER
	MATERIAL	RATE	COMMENTS
	STRAW OR HAY	1.5 TO 2 TONS/ACRE	SHOULD BE DRY, UNCHOPPED, FREE OF UNDESIRABLE SEEDS SPREAD BY HAND OR ANCHORED MUST BE CRIMPED OR ANCHORED
	WOOD FIBER OF CELLULOSE	1 TON/ACRE	APPLY WITH A HYDROMULCHER AND USE WITH TACKING AGENT
	LONG FIBER WOOD (EXCELSIOR)	0.5 TO 0.75 TON/ACRE	ANCHOR IN AREAS SUBJECT TO WIND
 SPREAD U GROUND IF STRAW MAINTENANCE DURING N 	ULCH AT THE RECOMMENDED RATE. JNIFORMLY BY HAND, HAY FORK, ML SURFACE SHOULD BE VISIBLE. OR HAY IS USED, ANCHOR IT IMMEE : VEGETATIVE ESTABLISHMENT, INSPEC REA SHOWS EROSION, REPAIR THE GF	DIATELY IN ONE OF THE FOLL	
3. AFTER VE	EGETATIVE ESTABLISHMENT, CHECK	THE TREATED AREA PERIODIC	
	ANCHORING METHOD		HOW TO APPLY
	MULCH ANCHORING TOOL OR FARM DISK (DULL, SERRATED ANE SET STRAIGHT))	CRIMP OR PUNCH THE STRAW OR HAY INTO THE SOIL 2 TO 4 INCHES. OPERATE MACHINERY ON THE CONTOUR OF 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 TO 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 ASTEM 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 OF SOIL STABILIZER	R	APPLY ACCORDING TO MANUFACTURER'S RECOMMENDATIONS
	BIODEGRADABLE NETTING (POLYP SIMILAR MATERIAL)*	ROPYLENE OR	APPLY OVER MULCH AND STAPLE WITH 6 TO 8 INCH 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 NETTING PARALLEL TO THE DIRECTION OF FLOW. ON OTHER SLOPES, LAY NETTING EITHER PARALLEL OR PERPENDICULAR TO DIRECTION OF FLOW. EDGES OF ADJACENT NETTING STRIPS SHOULD OVERLAP 4 TO 6 INCHES WITH THE STRIP ON THE UPGRADE SIDE OF ANY LATERAL WATER FLOW ON TOP. INSTALLATION DETAILS ARE SITE SPECIFIC. SO FOLLOW THE MANUFACTURER'S DIRECTIONS.

- MAINTENANCE INSPECT AFTER STORM EVENTS TO CHECK FOR MOVEMENT OF MULCH OR FOR EROSION.
- 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 FASY TO SLOW FROSION 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 DETERMINE DEPTH AND SUITABILITY OF TOPSOIL AT THE SITE.

- USUALLY MORE EFFICIENT AND EASIER TO CONTAIN THAN ONE LARGE PILE.)
- SPREADING TOPSOIL
- THE TOPSOIL BOND WITH THE SUBSOIL
- NHIBITS BONDING, AND CAN CAUSE COMPACTION PROBLEMS
- AFTER SPREADING, GRADE AND STABILIZE.

MAINTENANCE:

INSPECT NEWLY TOPSOILED AREAS FREQUENTLY UNTIL VEGETATION IS ESTABLISHED. REPAIR ERODED OR DAMAGED AREAS AND REPLANT.

TEMPORARY SEEDING

- SITE PREPARATION 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
- GRADE THE SITE AS SPECIFIED IN THE CONSTRUCTION PLAN

SEEDBED PREPARATION: FERTILIZE AS REQUIRED WORK THE FERTILIZER INTO THE SOIL 2-4 IN. DEEP WITH A DISK OR RAKE OPERATED ACROSS THE SLOPE

- SELECT A SEEDING MIXTURE AND RATE FROM THE TARLE AND PLANT AT DEPTH AND ON DATES SHOWN
- APPLY SEED UNIFORMLY WITH A DRILL OR CULTIPACKER-SEEDER OR BY BROADCASTING, AND COVER TO THE DEPTH SHOWN. IF DRILLING OR BROADCASTING. FIRM THE SEEDBED WITH A ROLLER OR CULTIPACKER. MULCH SEEDED AREAS TO INCREASE SEEDING SUCCESS
- UPON COMPLETION OF THE ROUGH GRADING, ALL AREAS AFFECTED BY CONSTRUCTION SHALL BE TEMPORARILY SEEDED IF THEY WILL REMAIN DORMANT FOR GREATER THAN 7 DAYS. THESE AREAS SHALL BE STABILIZED WITHIN 14 DAYS OF REMAINING DORMANT AND EROSION CONTROL BLANKETS SHALL BE INSTALLED ON SIDE SLOPES AS SHOWN ON THE PLANS
- MAINTENANCE DAMAGE AFTER STORM EVENTS AND REPAIR, RESEED AND MULCH IF NECESSARY.
- TEMPORARY SEEDING RECOMMENDATIONS

TEMPORARY SEEDING RECOMMENDATIONS SEED SPECIES RATE/ACRE WHEAT OR RYE 150 LBS. SPRING OATS 100 LBS. ANNUAL RYEGRASS 40 LBS.

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.

10 LBS

1 TO 2 LBS.

SITE PREPARATION

- TEMPORARY AND PERMANENT DIVERSIONS. SEDIMENT TRAPS OR BASINS, SILT FENCES, AND TRIANGULAR SILT DIKES. GRADE THE SITE AS SPECIFIED IN THE CONSTRUCTION PLAN AND FILL IN DEPRESSIONS THAT CAN COLLECT WATER. ADD TOPSOIL TO ACHIEVE NEEDED DEPTH FOR ESTABLISHMENT OF VEGETATION
- SEEDBED PREPARATION
- FERTILIZE AS REQUIRED SLOPF.

SEEDING TO BE IRRIGATED. AS AN ALTERNATIVE. USE TEMPORARY SEEDING UNTIL THE PREFERRED DATE FOR PERMANENT SEEDING.

- APPLY SEED UNIFORMLY WITH A DRILL OR CULTIPACKER-SEEDER OR BY BROADCASTING, AND COVER TO THE DEPTH SHOWN. IF DRILLING OR BROADCASTING FIRM THE SEEDBED WITH A ROLLER OR CLILTIPACKER 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 CHECK FOR EROSION DAMAGE AFTER STORM EVENTS AND REPAIR, RESEED AND MULCH IF NECESSARY.

PERMANENT SEEDING RECOMMENDATIONS

TO SHADE AND DROUGHT.

SEED SPECIES AND MIXTURES OPEN AND DISTURBED AREAS (REMAINING IDLE FOR MORE THAN

PERENNIAL RYEGRASS + WHITE OR LADINO DOVER

KENTUCKY BLUEGRASS

+ SMOOTH BROMEGRASS + SWITCHGRASS

+ TIMOTHY + PERENNIAL RYEGRASS

+ WHITE OR LADINO DOVER

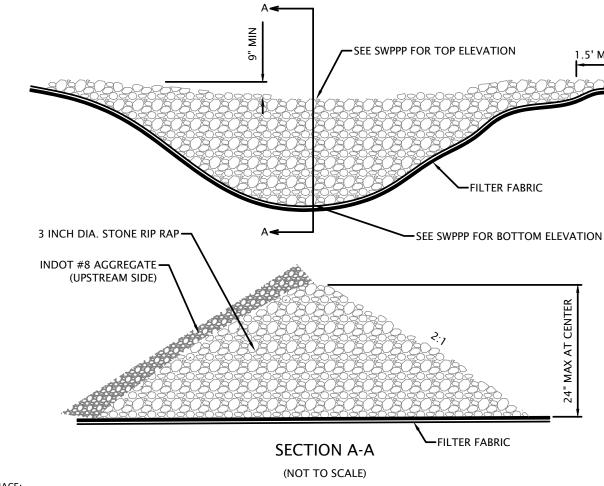
RUNOFF CONTROL MEASURES RIP-RAP CHECK DAMS

PRIOR TO STRIPPING TOPSOIL, INSTALL ANY SITE-SPECIFIC DOWNSLOPE PRACTICES NEEDED TO CONTROL RUNOFF AND SEDIMENTATION. REMOVE THE SOIL MATERIAL NO DEEPER THAN WHAT THE COUNTY SOIL SURVEY DESCRIBES AS "SURFACE SOIL" (i.e., A OR AP HORIZON) 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 IF SOIL IS STOCKPILED FOR MORE THAN 6 MOS., IT SHOULD BE TEMPORARILY SEEDED OR COVERED WITH A TARP OR SURROUNDED BY A SEDIMENT

PRIOR TO APPLYING TOPSOIL, GRADE THE SUBSOIL AND ROUGHEN THE TOP 3-4 IN. BY DISKING. THIS HELPS

DO NOT APPLY TOPSOIL WHEN THE SITE IS WET, MUDDY OR FROZEN, BECAUSE IT MAKES SPREADING DIFFICULT,

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



MAINTENACE INSPECT AFTER EACH STORM EVENT.

INSTALLATION:

REMOVE BUILT-UP SEDIMENT AND REPAIR/REPLACE THE CHECK DAMS AS NEEDED

ATTACHED DIKES TO THE GROUND WITH STAPLES AS INDICATED ON THE DETAIL.

PLACE TRIANGULAR SILT FENCE DIKE AS REQUIRED.

TRIANGULAR SILT FENCE DIKE - CHECK DAMS

THE TRIANGULAR-SHAPED INNER MATERIAL SHALL BE URETHANE FORM. THE OUTER COVER SHALL BE A WOVEN GEOTEXTILE FABRIC PLACED MATERIAL: AROUND THE INNER MATERIAL AND ALLOWED TO EXTEND BEYOND BOTH SIDES OF THE TRIANGLE 2 TO 3 FEE THE DIKES SHALL BE ATTACHED TO THE GROUND WITH WIRE STAPLES. THE STAPLES SHALL BE #11 GAUGE WIRE AND BE AT LEAST 6 TO 8 ANCHORING INCHES LONG. STAPLES SHALL BE PLACED AS INDICATED ON THE INSTALLATION DETAIL

INSPECT PERIODICALLY AFTER PLANTING TO SEE THAT VEGETATIVE STANDS ARE ADEQUATELY ESTABLISHED, RE-SEED IF NECESSARY. CHECK FOR EROSION TOP-DRESS FALL SEEDED WHEAT OR RYE SEEDING WITH 50 LBS./ACRE OF NITROGEN IN FEBRUARY OR MARCH IF NITROGEN DEFICIENCY IS APPARENT.

WHEAT OR RYE	150 LBS.	1 TO 1.5 INCHES	SEPTEMBER 15 TO OCTOBER 30
SPRING OATS	100 LBS.	1 INCH	MARCH 1 TO APRIL 15
ANNUAL RYEGRASS	40 LBS.	0.25 INCH	MARCH 1 TO MAY 1
			AUGUST 1 TO SEPTEMBER 1
JERMAN MILLE I	40 LBS.	1 TO 2 INCHES	MAY 1 TO JUNE 1
SUDANGRASS	35 LBS.	1 TO 2 INCHES	MAY 1 TO JULY 30

** SEEDING DONE OUTSIDE THE OPTIMUM DATES INCREASES THE CHANCE OF SEEDING FAILURE

THESE INSTALLATION PRACTICES ARE NEEDED TO CONTROL EROSION, SEDIMENTATION, AND WATER RUNOFF, SUCH AS

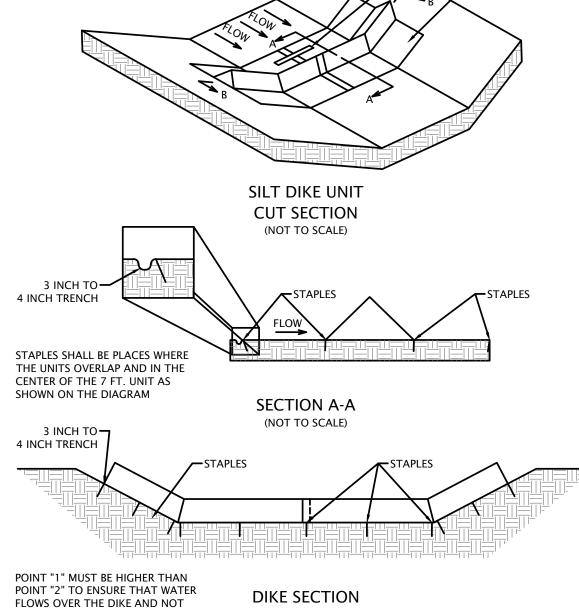
TILL THE SOIL TO OBTAIN A UNIFORM SEEDBED, WORKING THE FERTILIZER INTO THE SOIL 2-4 IN. DEEP WITH A DISK OR RAKE OPERATED ACROSS THE

OPTIMUM SEEDING DATES ARE MARCH 1-MAY 10 AND AUGUST 10-SEPTEMBER 30. PERMANENT SEEDING DONE BETWEEN MAY 10 AND AUGUST 10 MAY NEED SELECT A SEEDING MIXTURE AND RATE FROM THE TABLE AND PLANT AT DEPTH AND ON DATES SHOWN

MULCH SEEDED AREAS. USE EROSION CONTROL BLANKETS ON SLOPING AREAS. IF SEEDING IS DONE WITH A HYDROSEEDER, FERTILIZER AND MULCH CAN

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

RATE/ACRE	OPTIMUM SOIL pH
N ONE YEAR)	
30 TO 50 LBS. 1 TO 2 LBS.	5.6 TO 7.0
20 LBS. 10 LBS. 3 LBS. 4 LBS.	5.5 TO 7.5



DIKE SECTION SECTION B-B (NOT TO SCALE)

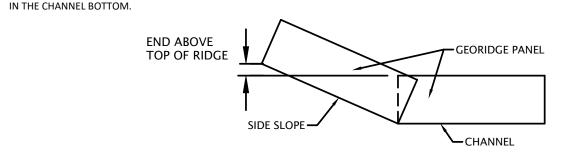
MAINTENACE INSPECT AFTER FACH STORM EVENT. REMOVE BUILT-UP SEDIMENT AND REPAIR/REPLACE THE CHECK DAMS AS NEEDED.

AROUND THE ENDS

GEORIDGE DITCH BERM - CHECK DAMS

GEORIDGE OR GEORIDGE BIO BY NILEX PRODUCTS, AN HDPE PRODUCT THAT SERVES TO DISSIPATE WATER ENERGY WITHIN A DITCH OR MATERIAL: CHANNEL. GEORIDGE IS TO BE USED IN APPLICATIONS WHERE THE MEASURE WILL BE REMOVED AFTER THE CHANNEL IS STABILIZED. 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 MINIMUM 6-INCH STAPLES PLACED 21-INCH 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-INCH 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. 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



- 4. THE SPACING IS CALCULATED BY DIVIDING THE HEIGHT OF THE GEORIDGE BY THE GRADIENT OF THE CHANNEL SLOPE. 9-INCH / 0.0.2 GRADIENT = 450 INCHES OR 37.5 FEET
- MAINTENANCE INSPECT AFTER EACH STORM EVENT.
- REMOVE BUILT-UP SEDIMENT WHEN IT REACHES HALF THE HEIGHT OF THE GEORIDGE. REPAIR/REPLACE THE GEORIDGE AND THE EROSION CONTROL MAT AS NEEDED.

SEDIMENT CONTROL MEASURES POLYMER SYSTEMS

APS 700 SERIES FLOC LOG OR EQUAL MATERIAL:

- INSTALLATION: 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. IN APPLICATIONS WHERE 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 BI 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) IN APPLICATIONS WHERE 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). 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: INSPECT AFTER STORM EVENTS TO CHECK FOR MOVEMENT OF MULCH OR FOR EROSION.
- IF WASHOUT, BREAKAGE, OR EROSION IS PRESENT IN THE SEDIMENT SETTLING MEDIA, REPAIR THE MEDIA. 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

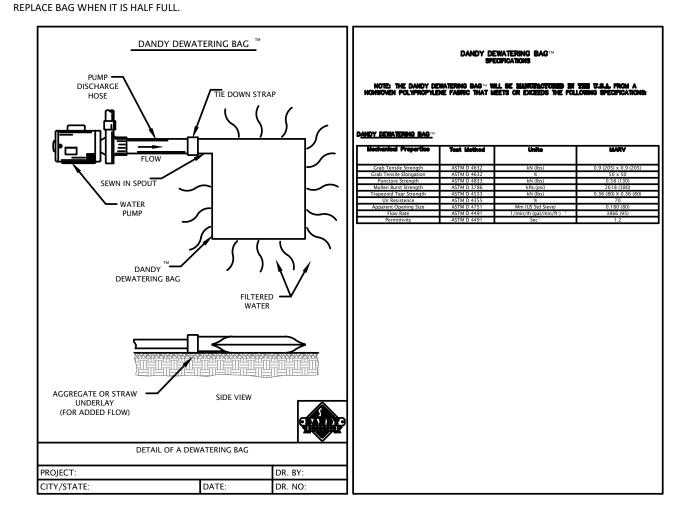
- TUBE SHAPED FIBER ROLLS FILLED WITH STRAW, FLAX, RICE, COCONULT FIBER MATERIAL, MULCH, OR COMPOSTED MATERIAL, FACH ROLLIS MATERIAL: WRAPPED WITH UV-DEGRADABLE POLYPROPYLENE NETTING FOR LONGEVITY OR WITH 100 PERCENT BIODEGRADABLE MATERIALS LIKE BURLAP, JUTE, OR COIR,
- INSTALLATION INSTALL ROLLS PARALLEL WITH THE SLOPE CONTOUR, WITH THE ENDS SLIGHTLY LOWER THAN THE MID-SECTION. TO PREVENT WATER PONDING AT THE MID-SECTION. TURN THE ENDS SLIGHTLY UPSLOPE TO PREVENT WATER FROM BYPASSING THE
- MFASURF EXCAVATE A TRENCH WITH A WIDTH AND DEPTH EQUAL TO ONE-FOURTH THE DIAMETER OF THE LOG. WHERE APPLICABLE INSTALL THE MEASURE UPSLOPE OF A CURB OR SIDEWALK. PLACING THE MEASURE AGAINST THE CURB WILL PROVIDE ADDITIONAL STABILITY AND RESISTANCE TO SURFACE FLOW.
- PLACE ROLLS END TO END TO FORM A CONTINUOUS BARRIER HARDWOOD STAKES SHALL BE DRIVEN THROUGH THE ROLLS, SPACED NO GREATER THAN 5' TO A DEPTH OF 18".
- THE FIBER ROLLS SHOULD BE FASTENED TO THE HARDWOOD STAKES WITH ROPE 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 THF ROLL
- MAINTENANCE 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
- REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES ONE-QUARTER OF THE HEIGHT OF THE ROLL. REPAIR FRODED AND DAMAGED AREAS.
- 4. IF PONDING BECOMES EXCESSIVE, ROLLS SHOULD BE REMOVED AND EITHER RECONSTRUCTED OR NEW PRODUCT INSTALLED.

SEDIMENT BASINS/DETENTION PONDS

- 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 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 THE BASIN SHALL BE LINED WITH A GEOTEXTILE FABRIC, 9" OF 4" RIPRAP SHALL BE PLACED ALL AROUND THE INSIDE OF THE BASIN.
- MAINTENANCE THE BASINS SHOULD BE INSPECTED WEEKLY AND AFTER EACH RAINFALL EVENT.
- REPLACE AND RESTORE ANY BASIN BANK FROSION.
- REPAIR OR REPLACE ANY DISPLACED RIPRAP. RE-EXCAVATE AND REPLACE THE BASIN WHEN IT BECOMES MORE THAN 50% FULL OF SEDIMENT

DEWATERING BAGS

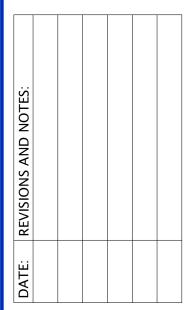
- "DANDY" DE-WATERING BAG OR "PUMP-IT" DE-WATERING BAG MATERIAL:
- INSTALLATION
- INSTALL AT LOCATION OF THE DEWATERING PUMP OUTFALL SIZE THE BAG T THE DISCHARGE RATE. THE MAXIMUM BAG SIZE MAY LIMIT THE DISCHARGE RATE OF THE PUMP
- CONNECT BAG TO PUMP OUTFALL PER MANUFACTURER'S INSTRUCTIONS. INSTALL BAG UPSTREAM OF THE RECEIVING STRUCTURE LOCATION.
- OUTLET TO GRASS AREA IF POSSIBLE
- MAINTENANCE: THE BASINS SHOULD BE INSPECTED PRIOR TO EACH USE.





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SEDIMENT CONTROL MEASURES (continued) **INLET PROTECTION**

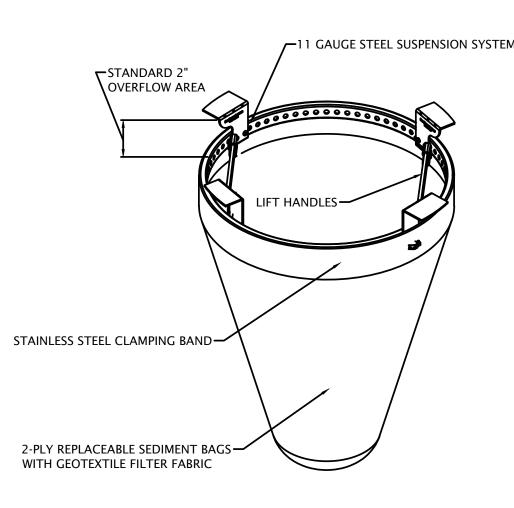
MATERIAL ·

CAPACITY:

FLEXSTORM CATCH-IT BY ADS, INC. OR APPROVED EQUAL. ADS CAN BE CONTACTED AT (866) 287-8655

Nominal Bag	Solids Storage	Filtered Flow Rate at 50% Max (CFS)		
Size	(CuFt)	FX (Woven)	IL (NonWoven)	
Small	1.6	1.2	0.9	
Medium	2.1	1.7	1.3	
Large	3.8	2.7	1.9	
XL	4.2	3.6	2.6	

- INSTALLATION 1. REMOVE GRATE; INSTALL PRIOR TO LAND DISTURBING ACTIVITIES AND/OR IMMEDIATELY AFTER DRAINAGE STRUCTURES HAVE BEEN
- INSTALLED DROP INLET PROTECTION ONTO LOAD BEARING LIP OF CASTING OR CONCRETE STRUCTURE. REPLACE GRATE.

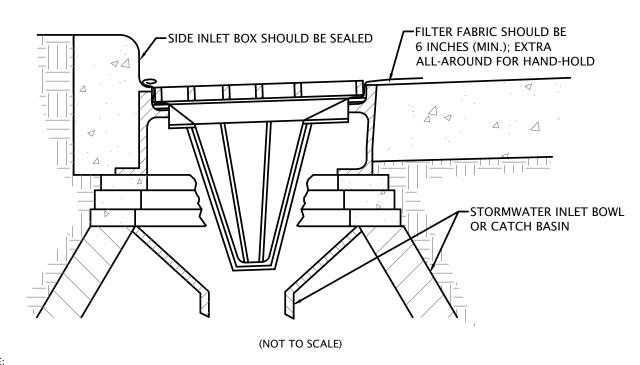


(NOT TO SCALE)

INLET PROTECTION - CURB BASKET

	CONTRIBUTING DRAINAGE AREA:	0.25 ACRE MAXIMUM
	LOCATION:	AT CURB INLETS WHERE BARRIERS SURROUNDING THEM WOULD BE IMPRACTICAL OR UNSAFE
	MATERIAL:	D2 CATCH-ALL INLET PROTECTOR OR APPROVED EQUAL D2 LAND & WATER RESOURCE (WWW.D2LWR.COM OR 800-597-2180)
	CAPACITY:	RUNOFF FROM A 2-YEAR FREQUENCY, 24-HOUR DURATION STORM EVENT ENTERING A STORM DRAIN WITHOUT BYPASS FLOW
	BASKET:	FABRICATED METAL WITH TOP WDITH/LENGTH DIMENSIONS SUCH THAT THE BASKET FITS INTO THE INLET WITHOUT GAPS
	GEOTEXTILE FABRIC:	FOR FILTRATION
		JRB INLET PROTECTIONS AS SOON AS INLET BOXES ARE INSTALLED IN THE NEW DEVELOPMENT OR BEFORE LAND-DISTURBING N A STABILIZED AREA.
2. IF NECESSARY, AD/		NPT BASKET DIMENSIONS TO FIT INLET BOX DIMENSIONS, WHICH VARY ACCORDING TO THE MANUFACTURER AND/OR MODEL. TS ON THOSE TYPES OF INLET BOXES THAT HAVE THEM.

REMOVE THE GRATE AND PLACE THE BASKET IN THE INLET. CUT AND INSTALL A PIECE OF FILTER FABRIC LARGE ENOUGH TO LINE THE INSDE OF THE BASKET AND EXTEND AT LEAST 6 INCHES BEYOND THE FRAM. REPLACE THE INLET GRATE, WHICH ALSO SERVES TO ANCHOR THE FABRIC.

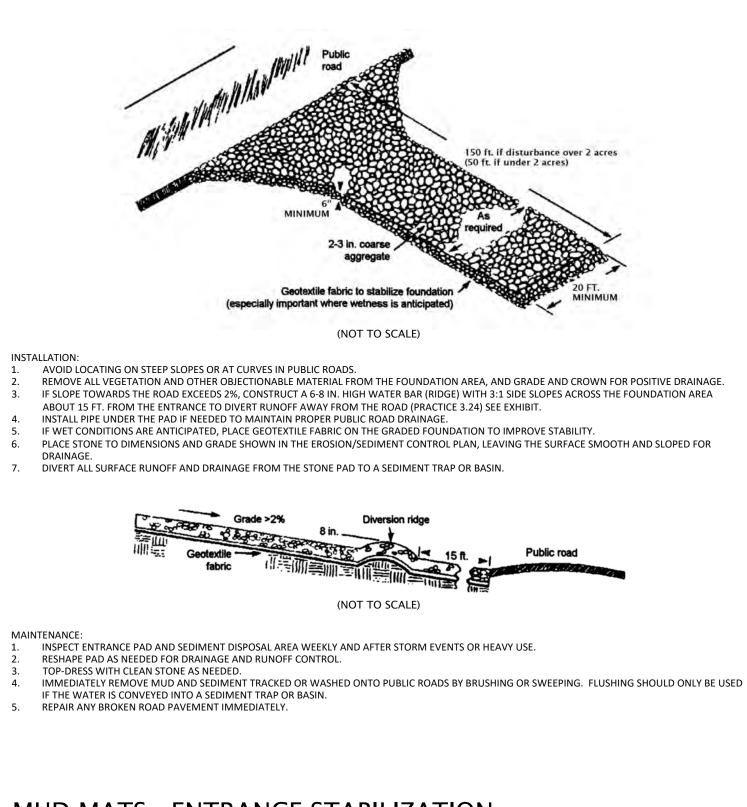


MAINTENANCE INSPECT AFTER EACH STORM EVENT

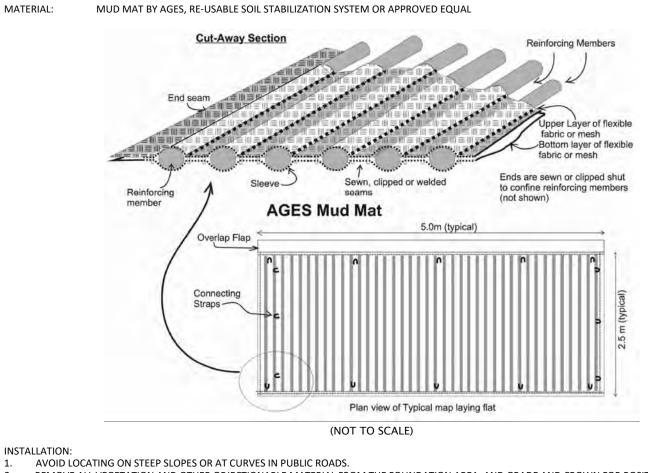
- REMOVE BUILT-UP SEDIMENT AND REPAIR (OR REPLACE IF NECESSARY) THE GEOTEXTILE FABRIC AFTER EACH STORM EVENT. PERIODICALLY REMOVE SEDIMENT AND TRACKED-ON SOIL FROM THE STREET (BUT NOT BY FLUSHING WITH WATER) TO REDUCE THE SEDIMENT LOAD ON THIS CURB INLET PRACTICE
- COMMON CONCERNS: 1. SEDIMENT NOT REMOVED AND GEOTEXTILE FABRIC NOT REPLACED FOLLWING A STORM EVENT RESULTS IN INCREASED SEDIMENT, TRACKING, TRAFFIC HAZARD, AND EXCESSIVE PONDING
- 2. GEOTEXTILE FABRICE PERMITTIVITY THAT IS TOO LOW RESULTS IN RAPID CLOGGING AND CAUSES SEVERE PONDING WITH SEDIMENT ENTERING THE DRAIN IF THE FABRIC BREAKS
- 3. DRAINAGE AREA TOO LARGE RESULTS IN SEDIMENT OVERLAOD AND SEVERE PONDING; SEDIMENT ENTERS THE DRAIN IF FABRIC BREAKS.

TEMPORARY CONSTRUCTION ENTRANCE/EXIT PAD

MATERIAL:	2 TO 3 INCHES OF V	VASHED STONE (INDOT #2 AGGR
THICKNESS:	6 INCHES MINIMUN	Λ
WIDTH:	20 FEET MINIMUM	OR FULL WIDTH OF ENTRANCE/E
LENGTH:	150 FEET MINIMUN	1 (50 FEET MINIMUM IF SITE DIST
WASHING FACILITY:		LEVEL AREA WITH 3 INCHES OF A SEDIMENT TRAP OR BASIN (PI
GEOTEXTILE FABRIC	UNDERLINER:	MAY BE USED UNDER WET CON BEARING STRENGTH



MUD MATS - ENTRANCE STABILIZATION



- REMOVE ALL VEGETATION AND OTHER OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA, AND GRADE AND CROWN FOR POSITIVE DRAINAGE. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. UNROLL, CONNECT MATS TOGETHER TO FORM AREA OF PROTECTION AND PROPERLY ANCHOR TO DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE MUD MAT TO A SEDIMENT TRAP OR BASIN. MINIMUM SIZE OF THE MAT IS 12 FEET WIDE AND 50 FEET LONG. MAINTENANC INSPECT ENTRANCE PAD DAILY AND REMOVE BUILT-UP DEBRIS AS NECESSARY.
- INSPECT ENTRANCE PAD FOR BREAKS AND TEARS IN THE MATERIAL. REPAIR OR REPLACE AS NECESSARY. IF THE WATER IS CONVEYED INTO A SEDIMENT TRAP OR BASIN. REPAIR ANY BROKEN ROAD PAVEMENT IMMEDIATELY.

REGATE) OVER A STABLE FOUNDATION

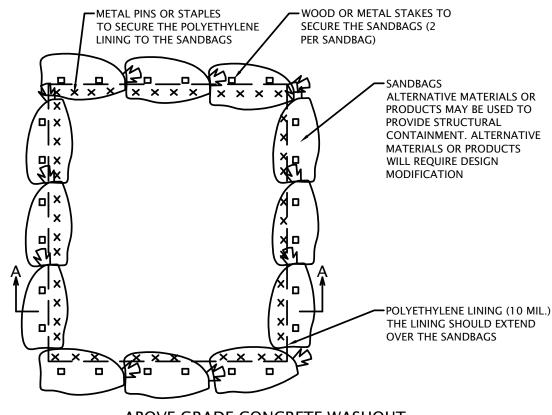
- /EXIT ROADWAY, WHICHEVER IS GREATER
- STURBANCE IS UNDER 2.0 ACRES)
- WASHED STONE (MINIMUM) OR A COMMERCIAL RACK AND WASTE WATER DIVERTED TO PRACTICE 3.72)
- NDITIONS OR FOR SOILS WITHIN A HIGH SEASONAL WATER TABLE TO PROVIDE GREATER

IMMEDIATELY REMOVE MUD AND SEDIMENT TRACKED OR WASHED ONTO PUBLIC ROADS BY BRUSHING OR SWEEPING. FLUSHING SHOULD ONLY BE USED

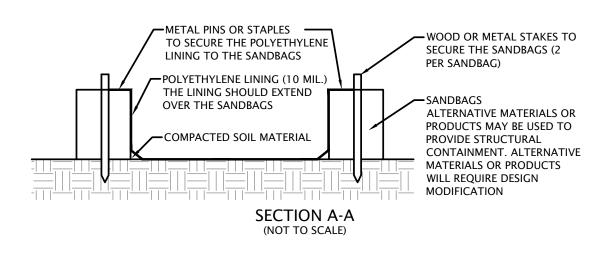
MATERIAL MANAGEMENT MEASURES (HOUSEKEEPING) CONCRETE WASHOUT

MINIMUM OF TEN MIL POLYETHYLENE SHEETING, FREE OF HOLES, TEARS, AND OTHER DEFECTS MATERIALS: ORANGE SAFETY FENCING OR EQUIVALENT

- SANDBAGS METAL PINS OR STAPLES SIX INCHES IN LENGTH MINIMUM.
- LOCATION: 1. LOCATE CONCRETE WASHOUT SYSTEMS AT LEAST 50 FEET FROM ANY CREEKS, WETLANDS, DITCHES, KARST FEATURES, OR STORM DRAINS/MANMADE CONVEYANCE SYSTEM
- 2. LOCATE CONCRETE WASHOUT SYSTEMS IN RELATIVELY FLAT AREAS THAT HAVE ESTABLISHED VEGETATIVE COVER AND DO NOT RECEIVE RUNOFF FROM ADJACENT LAND AREAS
- 3. LOCATE AWAY FROM OTHER CONSTRUCTION TRAFFIC IN AREAS THAT PROVIDE EASY ACCESS FOR CONCRETE TRUCKS.
- INSTALLATION: 1. A BASE SHALL BE CONSTRUCTED AND PREPARED THAT IS FREE OF ROCKS AND OTHER DEBRIS THAT MAY CAUSE TEARS OR PUNCTURES IN THE POLYETHYLENE
- 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
- 4. 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
- 9. 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. 10. 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. 11. HOLES, DEPRESSIONS, AND OTHER LAND DISTURBANCES ASSOCIATED WITH THE SYSTEM SHOULD BE BACKFILLED, GRADED, AND STABILIZED



ABOVE GRADE CONCRETE WASHOUT (NOT TO SCALE

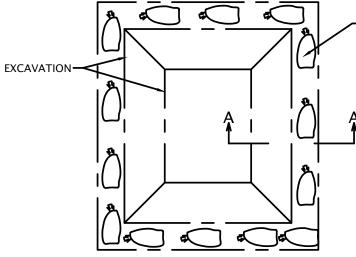


SANDBAGS OR OTHER

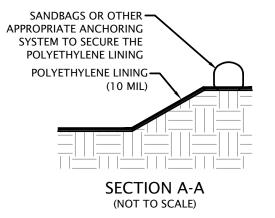
APPROPRIATE ANCHORING

SYSTEM TO SECURE THE

POLYETHYLENE LINING



BELOW GRADE CONCRETE WASHOUT (NOT TO SCALE)



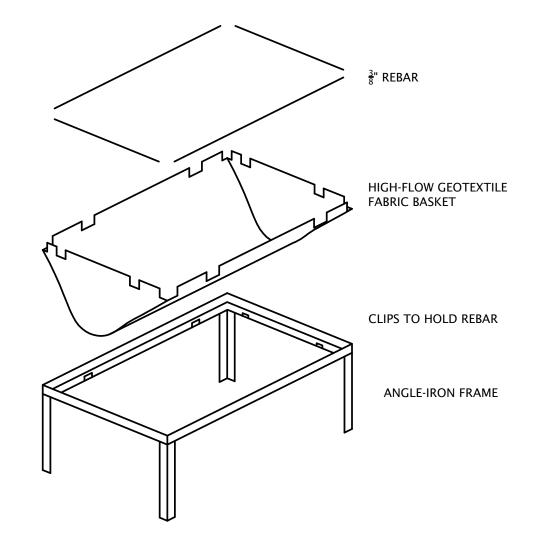
COMMON CONCERNS:

- 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
- 3. 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 4. INSTALL SIGNAGE IDENTIFYING THE LOCATION OF CONCRETE WASHOUT SYSTEMS.

FRYEFLOW FILTRATION SYSTEMS WASHOUT

MATERIALS: FRYE-FLOW FILTRATION SYSTEMS CONCRETE WASHOUT DEVICE OR APPROVED EQUAL

- 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 BAG 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 WHENEVER 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. 3. FUEL STORAGE SYSTEM SHALL BE KEPT IN GOOD WORKING ORDER AND SHALL BE SUBJECT TO PERIODIC IDEM INSPECTIONS.
- A. SPILL KITS MUST BE LOCATED ON-SITE IN THE VICINITY OF THE FUEL STORAGE SINK. 5. FUEL TANKS SHALL HAVE A SAFETY GAUGE.

STOCKPILES

- 1. 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. 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.

MATERIAL HANDLING AND STORAGE

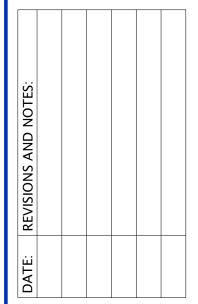
THE CONTRACTOR SHALL MINIMIZE THE DISTURBANCE OF EXCAVATED SOILS BY MINIMIZING THE NUMBER OF TIMES THE SOIL IS HANDLED. ON-SITE HANDLING OF SOILS WILL OCCUR DURING EXCAVATION, LOADING, AND SPREADING ACTIVITIES. FUEL FOR HEAVY EQUIPMENT AND VEHICLES WILL NOT BE STORED ON THE SITE DURING CONSTRUCTION OPERATIONS. 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 OUANTITY 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 SHEETS.



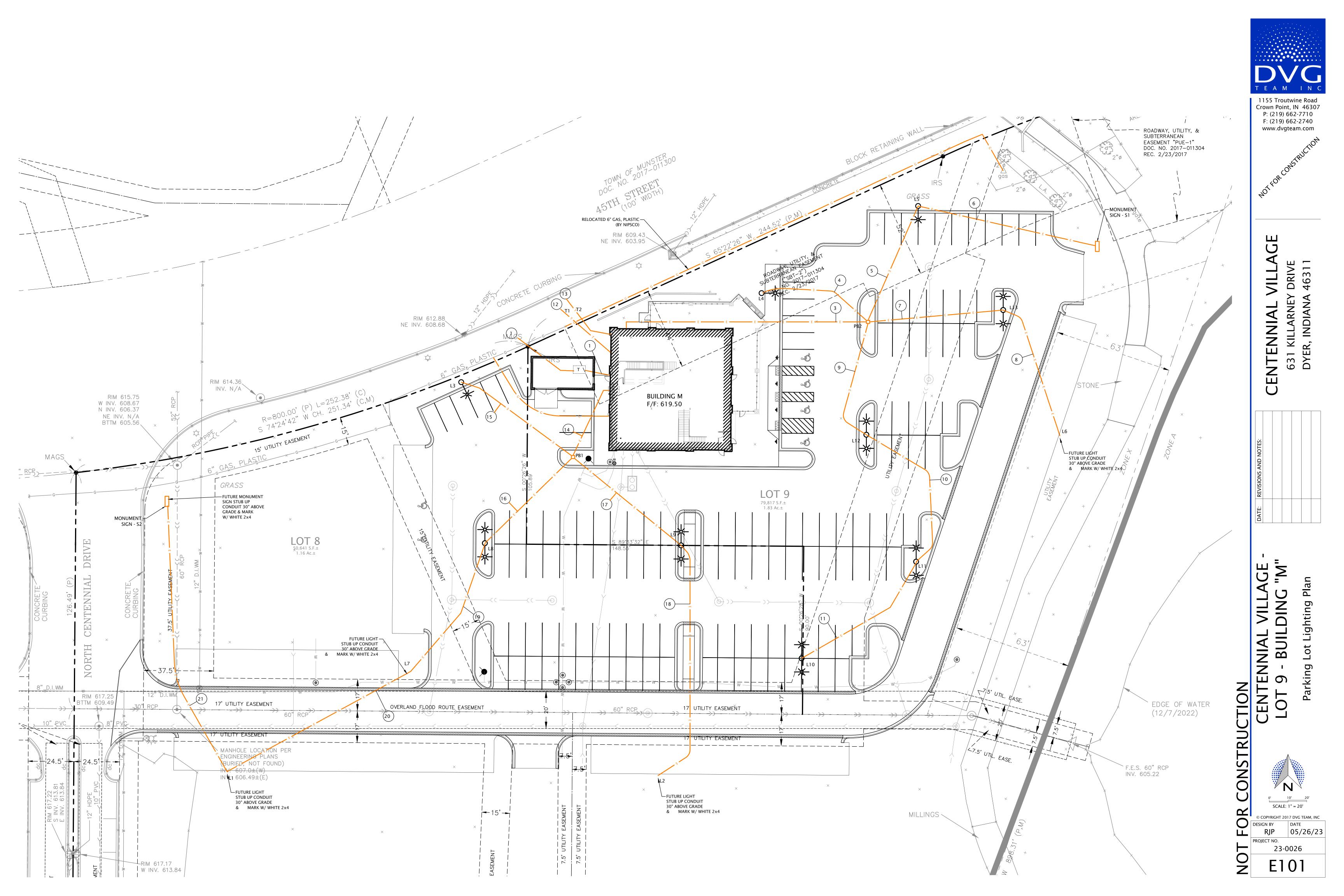
1155 Troutwine Road Crown Point, IN 46307 P: (219) 662-7710 F: (219) 662-2740 www.dvgteam.com

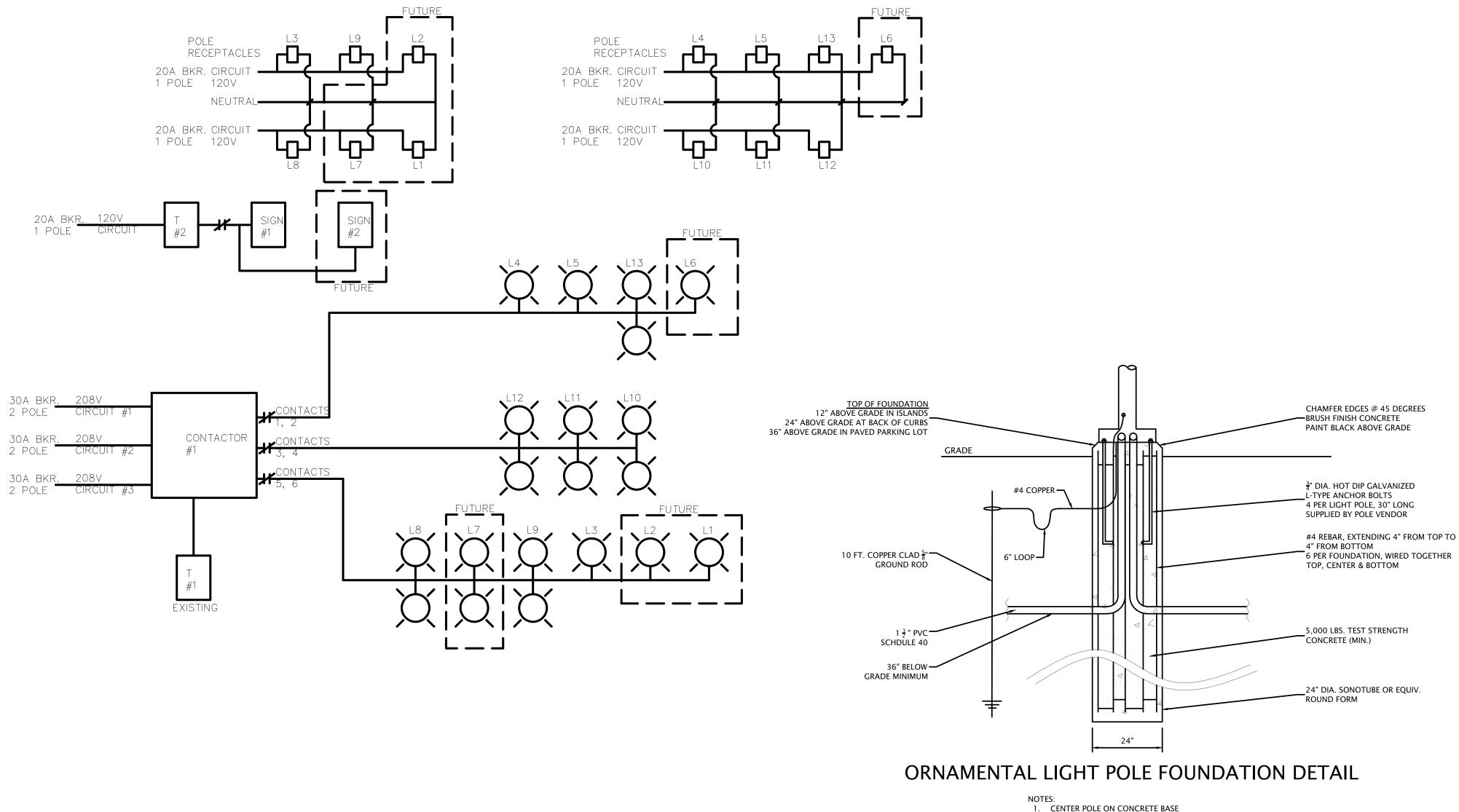








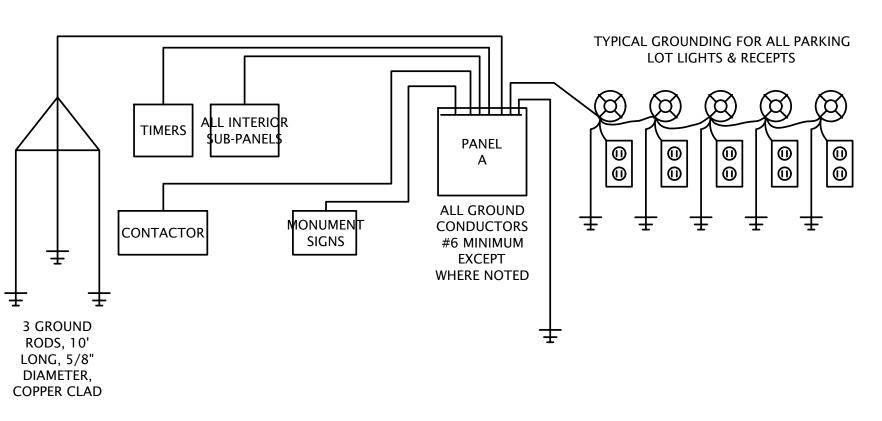




	Centennial Village Building M - Electrical Conduit Routing & Wire Sizing Schedule						
Conduit	ID Inches	From	То	Cond.Count & AWG	Description/Notes	Est.Length Ft.	
1	4.0	NIPSCO Pole	Xfmr. Pad	By NIPSCO	Pole or Primary Swithchgear	100	
2	4.0	Xfmr. Pad	Mtr.Bnk.	8c250mcm in ea. conduit	2 - 4"conduits in parallel	30	
3	2.0	Utility Rm.	PB2	9c6,1c6g	From Ltg Contactor, Ltg Panel, Timer	150	
4	1.5	PB2	L4	4c6,1c6g	Power to L4	65	
5	1.5	PB2	L5	6c6,1c6g	Power to L5, Sign S1	75	
6	1.0	L5	S1	3c6,1c6g	Power to Sign S1 (2c + Neutral)	110	
7	1.5	PB2	L13	4c6,1c6g	Power to L13, L6	85	
8	1.5	L13	L6	4c6,1c6g	Power to L6	90	
9	1.5	PB2	L12	4c6,1c6g	Power to L10, L11, L12	70	
10	1.5	L12	L11	4c6,1c6g	Power to L10, L11	85	
11	1.5	L11	L10	4c6,1c6g	Power to L10	95	
12	2.0	Utility Rm.	Street	By telecom supplier #1	To telecom pedestal if existing	100	
13	2.0	Utility Rm.	Street	By telecom supplier #2	To telecom pedestal if existing	100	
14	2.0	Utility Rm.	PB1	7c6,1c6g	From Ltg Contactor, Ltg Panel, Timer	65	
15	1.5	PB1	L3	4c6,1c6g	Power to L3	90	
16	1.5	PB1	L8	7c6,1c6g	Power to L1, L7, L8, Sign S2	75	
17	1.5	PB1	L9	4c6,1c6g	Power to L2, L9	85	
18	1.5	L9	L2	4c6,1c6g	Power to L2	145	
19	1.5	L8	L7	7c6,1c6g	Power to L1, L7, Sign S2	75	
20	1.5	L8	L7	7c6,1c6g	Power to L1, Sign S2	95	
21	1.5	L7	L1	3c6,1c6g	Power to Sign S2 (2c + Neutral)	150	

ltem	Quantity	Brand	Size	Volts	Description	Туре
Poles L1-L6	6	Holophane	P60S	208	Memphis MPL3P60S40KMVOLTTG4QSMBK	Head
Poles L7-L13	14	Holophane	P60S	208	Memphis MPL3P60S40KMVOLTTG4QSMBK	Head
Poles L1-L13	13	Holophane	18 ft	N/A	WDA18SL517DC12BKABG-RP60AFGIUSBKASSY14460	Alum. Pole
Poles L1-L6	6	Holophane	27 inches	N/A	CVC27IN1ATNQSMBK	Single Arn
Poles L7-L13	7	Holophane	27 inches	N/A	CVC27IN2ATNQSMBK	Dbl Arm
Wallpack	12	Holophane	115 watts	120	HLWPC2P5040KMVOLTTFTMBKSDP (See Note #1)	Aluminum
Contactor	1	Square D	30 amp	208	Cat.# 8903LG60V02CP1 w/120 volt coil	6-pole
PB1,2	2	Quazite	14X14X12	N/A	Cat.#PC1212Z80109	W/Cover
T1	2	Tork	40 amp	120	Timer - EWZ103 indoor surface mounting	DPST

operational.



2. IF SOIL IS STABLE, SONOTUBES MAY BE USED IN THE TOP OF

FOUNDATION AND THE CLAY OF THE AUGURED HOLE WILL FORM THE REMAINDER

- 3. CONTRACTOR SHALL USE TEMPLATE FURNISHED WITH POLE TO SET ANCHOR BOLTS
- 4. INSTALL NON-SHRINK GROUT BETWEEN POLE AND BASE 5. FOUNDATION TO EXTEND 7 FEET BELOW GRADE

SITE POWER SYSTEMS CONSTRUCTION NOTES The electrical contractor to coordinate "Turn Ons" with NIPSCO, the city, and developer. The electrical work includes furnishing all supervision, labor, materials, site lighting supplies, tools and services required to complete the installation of all electrical work as shown and described in the Project Plans. . The electrical contractor shall install all work in accordance with all local electrical requirements and codes and shall be completed in full compliance with the National Electric Code (NFPA 70). The electrical contractor shall verify all voltage, phase, full load current, wire size, and exact location of all electrical equipment before rough installation. The electrical contractor shall submit shop drawings for designer approval on all electrical components, including, but not limited to lighting, contactors, panels, timers, conduits, and foundation systems. Conduit trenches shall be 36 inches deep minimum with sand surrounding conduits. 6. The electrical contractor shall obtain all required electrical licenses, permits and pay the required inspection fees in accordance with local ordinances and the work shown on the project plans. All electrical material shall bear the appropriate U.L. label if applicable. All wire and cable shall be copper with 600V insulation. The minimum wire size shall be #12 AWG, except for control cable. All wire sizes #10 and smaller may be solid. All cable sizes #8 and larger shall be stranded with types as follows: "THHN" - Feeders & branch cables above finished floor and not subject to moisture. "THWN" - Feeders & branch cables installed below finished floor or grade subject to moisture. 9. All wiring shall be color coded to indicate its voltage and phasing, suggested color coding scheme is as follows 120/240V BLACK AØ BROWN <u>SYSTEM</u> POLE 1 Ground conductors shall be green or POLE 2 BLUE BØ ORANGE taped green at points of connection POLE 3 N/A CØ YELLOW NEUTRAL WHITE GREY Neutral wires with tracers shall be used to identify neutrals for conduits containing more than one network neutral. 10. All wiring above grade shall be installed in electrical metallic tubing (EMT), intermediate metallic conduit (IMC), or galvanized rigid conduit (GRS). All wiring below finished floor or grade shall be installed in rigid non-metallic conduit (PVC), where allowed, IMC or GRC with galvanized rigid or intermediate metallic conduit stubs. All wiring installed in areas subject to damage or weather shall be installed in IMC or GRC 11. All wiring installed in PVC shall have the appropriately sized equipment grounding conductor installed. 12. All fittings for EMT shall be steel set screw, all fittings for IMC and GRC shall be threaded or steel headless set screw. 13. No "backstabbing" of any device shall be allowed. 14. All devices listed as GFI protected shall be permitted to be protected as slave devices on the load side of a GFI protection device listed for this purpose or by a listed GFCI circuit breakers. 15. All devices shall be commercial grade or better, no residential grade devices shall be used. all device wiring shall be terminated on the screws. 16. It shall be the responsibility of the electrical contractor to size all wire such that voltage drop to any light fixture, device or equipment shall be less than 4% when said item is

17. Circuits to be connected to existing panels such that no panel is over loaded and such that loads are distributed evenly among panels. 18. Poles shall be leveled on their foundations. Fixtures shall be leveled on their roadway arms by adjusting the transistion fitter. Fixture illumination pattern is Type 3 to be oriented parallel with the roadway. 19. Conduits shall be PVC schedule 80 under 109th Place, Schedule 40 PVC elsewhere, and galvanized steel where noted.

20. Telecom conduit stubs to be capped and marked with a 2x4 painted white.



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SYSTEM GROUNDING DETAIL

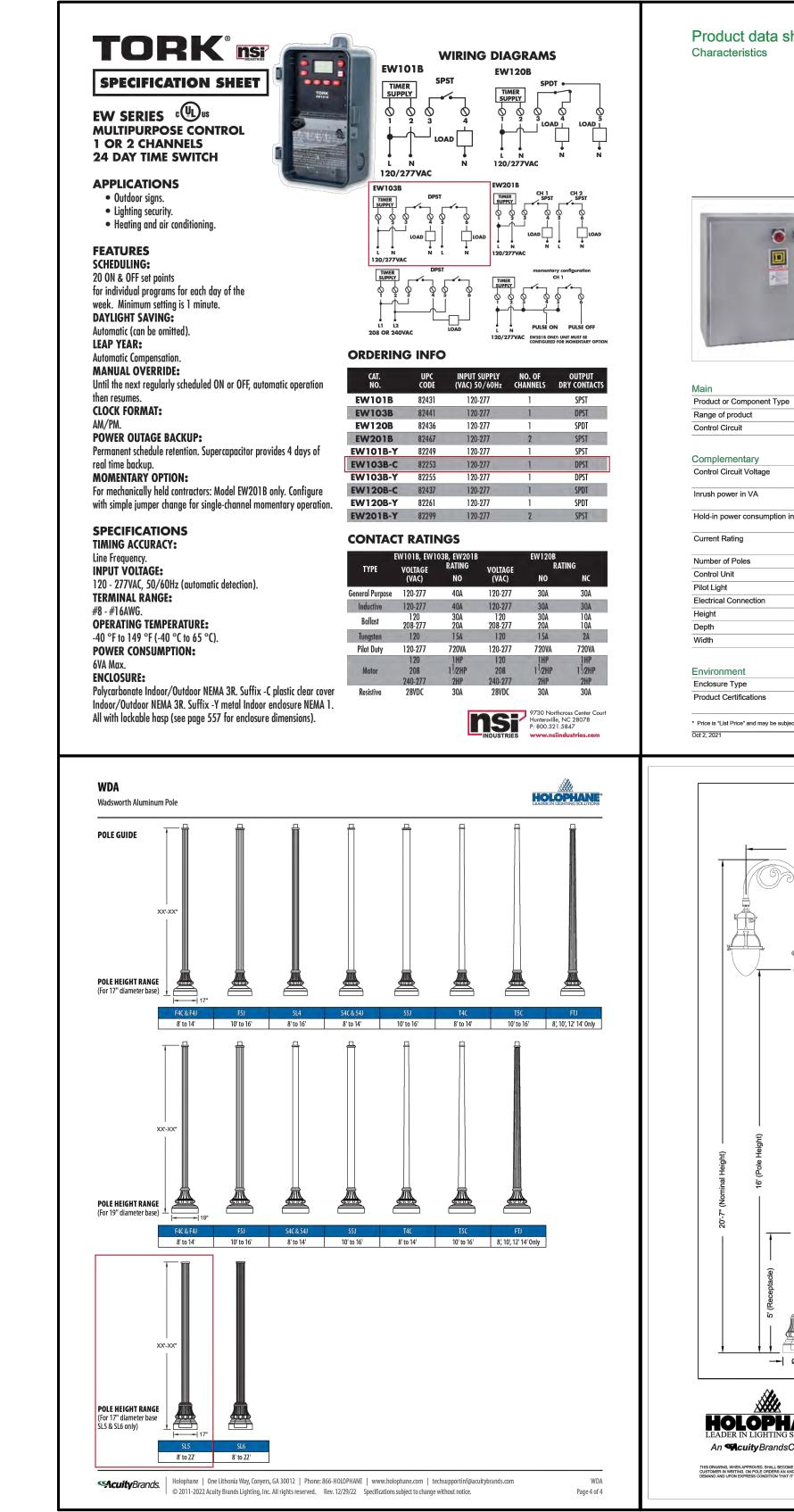


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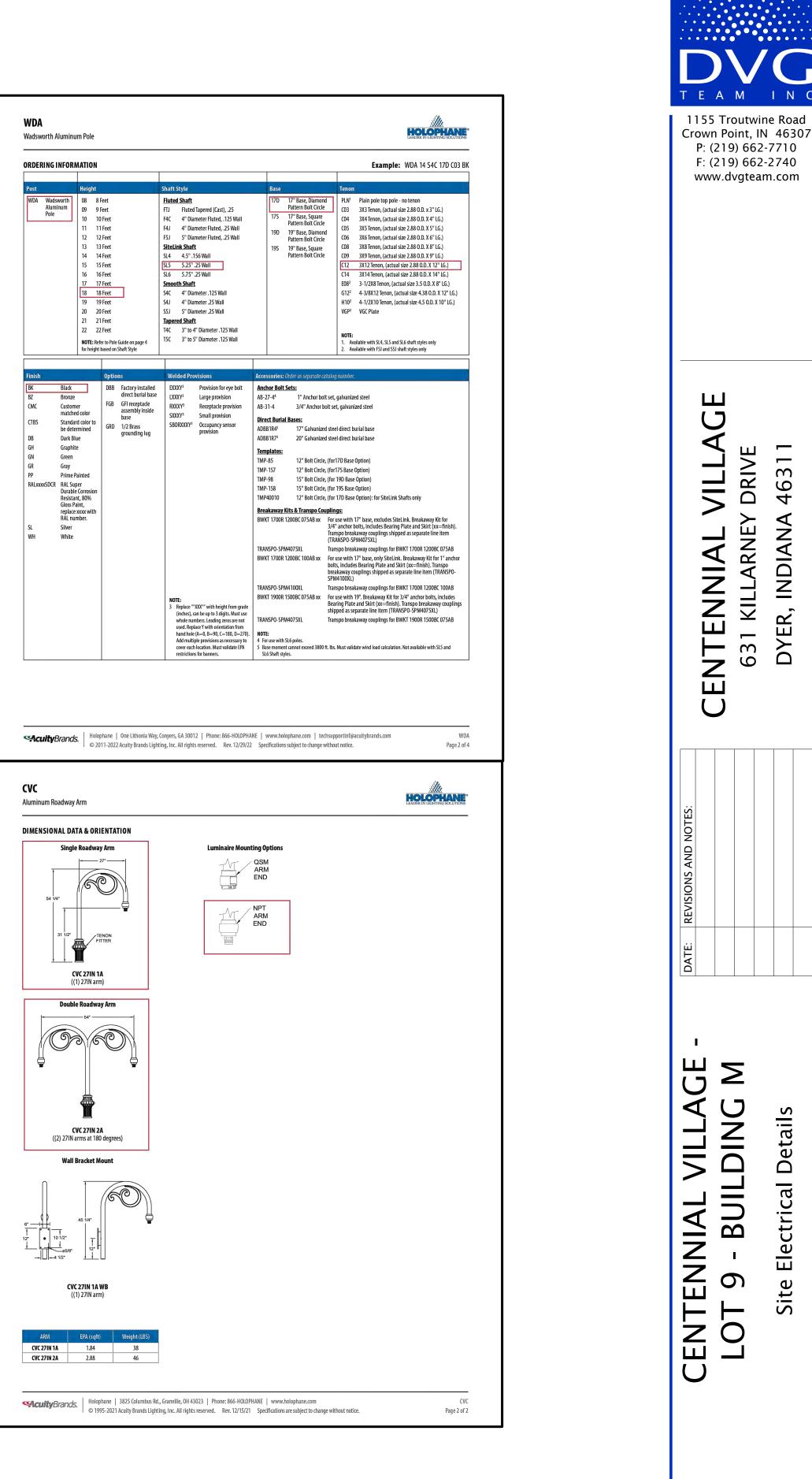
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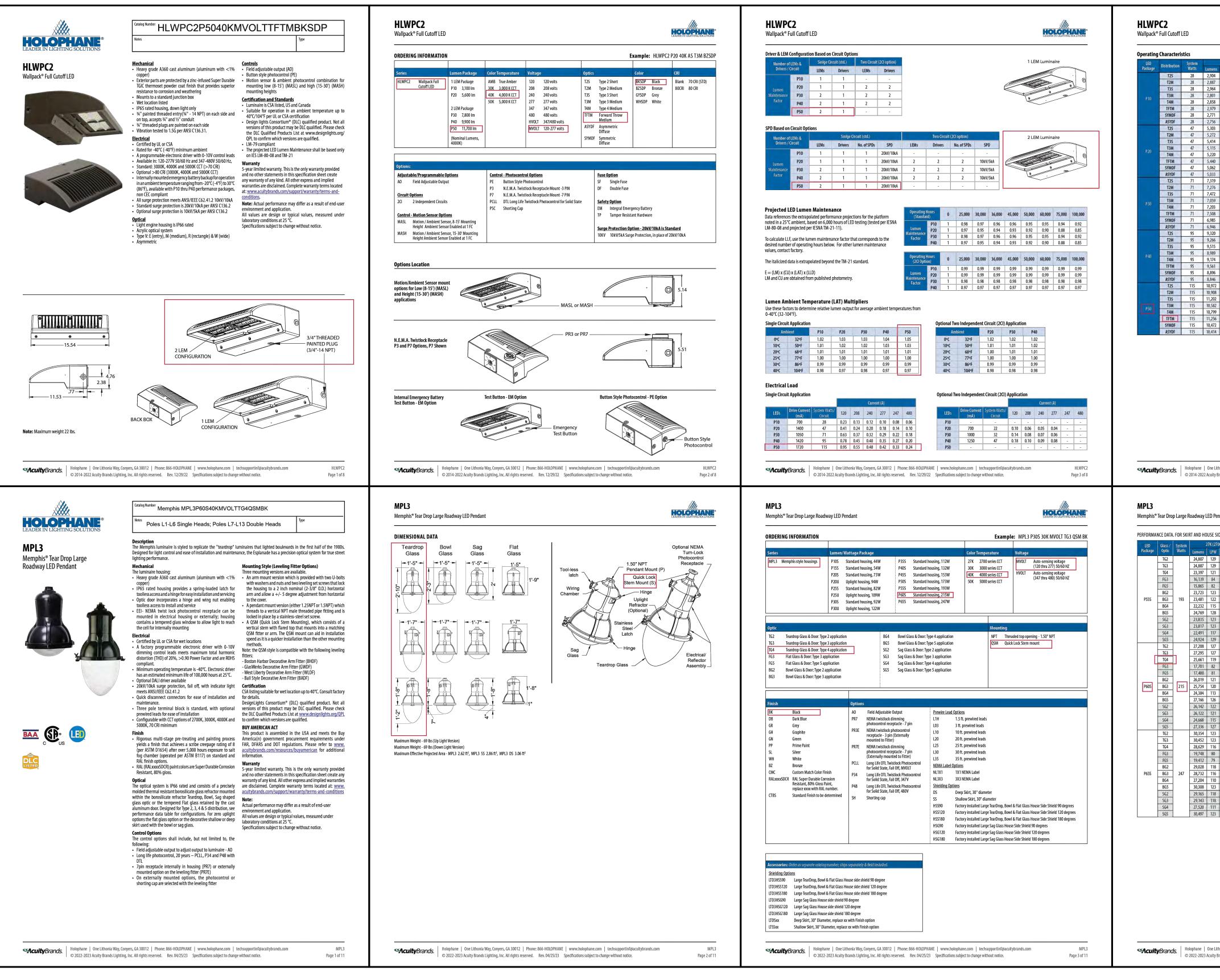
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110 V / 120 V / 25 V / 150 V / 150 V / 30 V	ate control circuit AC 50 Hz AC 50 Hz AC 60 Hz 60 Hz AC 50 Hz 60 Hz B 50 Hz B ungsten B luorescent B NO B or switch HAND-OFF-AUTO) B ndicator on incandescent B -clamp terminals B in (302 mm)		yers, GA 30012 Phone: 866-H0L0PHANE www.holophane.com techsupportinf@acultybrands.com WDA Inc. All rights reserved. Rev. 12/29/22 Specifications subject to change without notice. Page 1 of 4
54"	Wadsworth Series Pole Aluminum, SiteLink L5J Shaft Special CVC Arm with QSM Holophane Black finish Mathematical CVC Arm with QSM Holophane Black finish Mathematical CVC Arm with QSM Holophane Black finish Mathematical CVC Arm with QSM Holophane Black finish Holophane Black finish Mathematical CVC Arm with QSM Holophane Black finish Holophane Black finish Mathematical CVC Arm with QSM Holophane Black finish Holophane Black finish <td><image/><section-header><section-header><section-header><section-header></section-header></section-header></section-header></section-header></td> <td>Catalog Number Single Arm CVC27IN1ATNQSMBK Inter Double Arm CVC27IN2ATNQSMBK Openation Ippe Constructions of a decorative post mounting piece and an end piece for luminaire mounting. The wall bracket shall have a flat aluminum wall piece a ber tube arm, a decorative scroll, and an end piece for luminaire mounting. The wall bracket shall have a flat aluminum wall piece at for mounting. All welding shall be per ANSI/AWS D1.2. All welders shall be certified per ANSI/AWS D1.2. Part tube arm, a decorative scroll, and mend piece for luminaire mounting the wall bracket shall have a flat aluminum wall piece at form certified ASTM 356.1 ingot per ASTM B179 or ASTM B26. Le stainless steel hardware Det nucluary and wall bracket back plate of aluminum ASTM 6061 alug e stainless steel hardware Det cast steen fifter is designed to slipfit a 3 inch 0.0. by 12 inch (C12) tall tenon and attach with socket set screws e. The vall bracket shall have four clear holes for mounting to the wall (wall mounting hardware furnished by others): a. The vall bracket shall have four clear holes for mounting to the wall (wall mounting hardware furnished by others): a. The vall bracket shall have four clear holes for mounting to the wall (wall mounting hardware furnished by others): b. Standard and RAL finish options. A lear tower 5,000 hours exposure to salt fog chamber (operated per ASTM B17) on standard and RAL finish options. b. Calcuary complex ewares. Complete warranty terms located at (Holophane Pole Warranty): c. Weaturbrands.com/support/customer-support/terms-and-conditions. Weaturbrands.com/support/customer-support/terms-and-conditions. Weaturbrands.com/support/customer-support/terms-and-conditions. Weaturbrands.com/support/customer-support/terms-and-co</td>	<image/> <section-header><section-header><section-header><section-header></section-header></section-header></section-header></section-header>	Catalog Number Single Arm CVC27IN1ATNQSMBK Inter Double Arm CVC27IN2ATNQSMBK Openation Ippe Constructions of a decorative post mounting piece and an end piece for luminaire mounting. The wall bracket shall have a flat aluminum wall piece a ber tube arm, a decorative scroll, and an end piece for luminaire mounting. The wall bracket shall have a flat aluminum wall piece at for mounting. All welding shall be per ANSI/AWS D1.2. All welders shall be certified per ANSI/AWS D1.2. Part tube arm, a decorative scroll, and mend piece for luminaire mounting the wall bracket shall have a flat aluminum wall piece at form certified ASTM 356.1 ingot per ASTM B179 or ASTM B26. Le stainless steel hardware Det nucluary and wall bracket back plate of aluminum ASTM 6061 alug e stainless steel hardware Det cast steen fifter is designed to slipfit a 3 inch 0.0. by 12 inch (C12) tall tenon and attach with socket set screws e. The vall bracket shall have four clear holes for mounting to the wall (wall mounting hardware furnished by others): a. The vall bracket shall have four clear holes for mounting to the wall (wall mounting hardware furnished by others): a. The vall bracket shall have four clear holes for mounting to the wall (wall mounting hardware furnished by others): b. Standard and RAL finish options. A lear tower 5,000 hours exposure to salt fog chamber (operated per ASTM B17) on standard and RAL finish options. b. Calcuary complex ewares. Complete warranty terms located at (Holophane Pole Warranty): c. Weaturbrands.com/support/customer-support/terms-and-conditions. Weaturbrands.com/support/customer-support/terms-and-conditions. Weaturbrands.com/support/customer-support/terms-and-conditions. Weaturbrands.com/support/customer-support/terms-and-co
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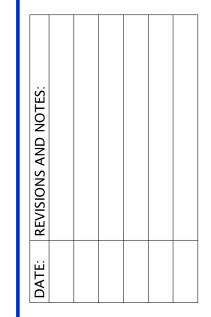
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1155 Troutwine Road Crown Point, IN 46307 P: (219) 662-7710 F: (219) 662-2740 www.dvgteam.com

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Endants L IDE SHI 00K, 70 8 3 3 3 3 3 3 3 3 3 3 3 3 3	ELD OF (RI) U 3 3 3 3 3 3 3 3 3 3 3 3 3	Control Contro	rights reserved and a second s	FACTO 30K (300 139 139 131 124 139 133 133 126 139 133 123 133 126 139 133 133 126 139 133 133 126 139 137 137 137 137 137 137 137 137 137 133 133	Rev. 12 RY OR 00K, 70 B 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	V29/22 WEBSI CRI) U 4 4 4 3 3 0 0 4 4 4 4 4 4 4 4 4 4 4 4 4	Specifi G S S S S S S S S S S S S S	Lumens 27,266 27,353 25,716 17,373 26,074 25,809 27,224 26,178 24,436 27,224 24,436 27,224 24,36 27,224 24,36 27,224 24,36 27,224 24,36 27,224 24,36 27,324 24,200 27,324 24,36 27,224 24,36 26,178 24,167 26,178 24,167 26,178 24,167 26,178 24,167 26,178 24,167 26,178 24,167 26,178 26,178 26,178 26,178 27,113 26,178 26,178 27,113 26,178 27,113 26,178 27,113 26,178 27,113 26,178 27,113 26,178 27,113 26,178 27,113 26,178 27,113 26,178 27,113 26,178 27,115	0K (400 LPW 141 142 133 92 90 135 134 127 141 136 128 142 139 140 131 136 128 142 139 130 89 133 132 125 139 134 125 139 134 125 139 134 125 139 132 132 132 132 132 132 132 132	OK, 70 CF B 3 4 4 4 4 4 4 4	I) G 4 5 4 5 4 5 3 4	e. Lume 27.66 27.76 27.75 26.55 26.55 25.07 27.75 26.55 25.07 27.75 26.55 25.07 27.75 26.55 25.07 27.75 26.55 25.07 27.75 26.55 25.07 27.75 26.55 26.55 25.07 27.75 20.03 30.33 30.25 29.15 29.15 29.15 29.15 29.15 29.15 29.15 29.15 29.15 29.15 29.15 29.15 29.15 29.15 29.15 20.1	50K (5 ns LPW 12 143 13 19 13 137 6 93 10 92 33 137 14 136 15 12 14 136 17 148 18 138 18 138 19 130 12 90 13 14 14 133 18 92 13 135 14 133 15 13 14 133 15 13 16 137 16 137 13 129 13 129 13 129 14 130 15 123 16 88 13 129 13 130 13	0000K, 70 B 3 3 3 3 3 3 3 3 3 3 3 3 3	U 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 4 4 0 0 0 0 0 0 0 0 0	G S	Page 4 (of 8
Endant IDE SHI 00K, 70 8 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	ELD OF (R) U 3 3 3 3 3 3 0 0 4 4 4 4 4 4 3 3 3 3 4 4 4 4 4 4 3 3 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4	Contemporal and a contemporal	rights reserved consult 26,773 26,859 25,251 17,418 17,122 25,603 25,342 25,724 25,724 25,724 25,724 25,724 25,724 25,724 25,724 25,724 25,724 25,724 25,724 25,724 25,724 25,724 25,724 25,725 26,317 29,364 29,462 29,364 29,462 20,317 29,502 32,760 32,866 30,898 31,328 31,009 29,360 32,710 31,473 31,453 29,702	FACTO 30K (300 LPW 139 139 131 131 124 139 133 133 124 139 133 124 139 133 124 139 133 125 89 87 131 129 122 126 131 131 124 137 133 133 125 86 85 127 126 119 132 127 127 120	Rev. 12 RY OR 3 3 3 3 3 3 3 3 3 3 3 3 3	V29/22 WEBSI CRI) U 4 4 4 3 3 0 0 4 4 4 4 4 4 4 4 4 4 4 4 4	Specifi G S S S S S S S S S S S S S S S S S S	Lumens 27,265 27,257 27,5716 27,25716 27,378 17,437 26,074 25,809 24,436 27,224 26,407 27,224 26,198 26,178 24,720 24,436 26,178 24,420 24,436 27,224 24,557 24,204 24,557 24,204 29,559 29,559 28,733 28,731 28,734 28,735 28,735 28,733 28,737 28,366 29,859 29,859 29,859 29,859 28,733 28,731 28,733 28,731 27,113 30,045 33,3470 31,466 21,356 21,336 33,470 31,466 21,336 31,580 29,900 33,312 23,3312 24,335 24,3555 24,3555 24,3555 24,35555 24,35555555555555555555555555555	0K (400 LPW 141 142 90 135 134 127 141 136 136 128 142 139 134 136 128 132 133 132 125 133 132 125 133 132 125 134 127 134 127 135 136 128 128 129 128 134 126 127 134 134 135 136 136 128 132 132 132 133 132 134 135 136 136 128 132 132 134 135 136 136 136 136 136 136 136 136	0K, 70 CF B 3 4 4 3 3 3 4 4 3 3 3 3 3 3 3 3 3 4 4 3 3 3 4 3 3 3 3 3 3 3 3	I) G 4 5 4 5 3 5 4 5 5 5 4 5 5 5 4 5 5 5 5 5 4 5 5 5 5 5 5 5	e. Lume 27,66 27,76 27,76 26,45 26,45 26,45 26,45 26,45 26,45 26,55 26,55 25,07 27,75 26,55 26,55 25,07 27,75 26,55 25,07 27,75 26,55 26,55 25,07 27,75 26,55 27,75 20,55 26,55 27,75 20,5	50K (5 ns LPW 12 143 13 19 13 137 6 93 10 92 33 137 14 136 15 12 14 136 17 148 18 138 18 138 19 130 12 90 13 14 14 133 18 92 13 135 14 133 15 13 14 133 15 13 16 137 16 137 13 129 13 129 13 129 14 130 15 123 16 88 13 129 13 130 13	0000K, 70	U 4 3 3 3 3 3 3 3 3 3 4 0 0 0 4 4 4 4 4 4 4 4 4 4 4	6 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Page 4 (of 8

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Symbol	Label	QTY	Manufacturer	Catalog	Description	Number Lamps	Lamp Output	LLF	Input Powe
A O	L	6	Holophane	MPL3 P60S 40K XXXXX TG4	Memphis style housings Standard housing, 4000 series CCT Auto-sensing voltage, Type IV, Medium, (Standard or Uplight)	1	28204	0.9	214.54
	S	12	Holophane	HLWPC2 P50 40K XX TFTM	Wallpack Full Cutoff LED, LED Performance Package P20, 4000 series CCT, Voltage, Forward Throw Medium	1	12125	0.9	115
*0 · 0	L	7	Holophane	MPL3 P60S 40K XXXXX TG4	Memphis style housings Standard housing, 4000 series CCT Auto-sensing voltage, Type IV, Medium, (Standard or Uplight)	1	28204	0.9	429.08

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Total including Spill	+	3.0 fc	21.2 fc	0.0 fc	N/A	N/A
Lot Lighting Calcs.	Ж	5.0 fc	20.1 fc	0.5 fc	40.2:1	10.0:1

Note

1. Luminaires depreciated to 0.9 LLF 2. See Location Schedule for aiming and orientation. 3. Vist acuitybrands.com for full spec information.

DISCLAIMER This architectural lighting submittal is provided only for informational purposes and to the help the customer or end-user (as applicable) understand how various sections of linear fixtures connect to each other and how they mount to the ceiling. This lighting submittal is strictly based on the information provided to Acuity Brands, and is provided without warranty as to accuracy, completeness, reliability or otherwise. If the information (including but not limited to floor-plans, reflected ceiling plans, electrical plans and specifications) provided to Acuity Brands is incomplete or not current (i.e., newer versions exist), the accuracy of proposed design may be adversely affected. Once this lighting submittal is received by the customer or end-user (as applicable), it is the obligation of the customer or end-user (as applicable) to consult with a professional engineering advisor to determine whether the proposed design meets the applicable project requirements for lighting system performance, code compliance, safety, suitability and effectiveness for use in a particular application. In no event will Acuity Brands be responsible for any loss resulting from any use of any information contained in this lighting submittal. lighting submittal.

		e Locati	Location						Aim		
	Label	x	Y	z	мн	Orientation	Tilt	x	Y	z	
	L	5657.92	10986.30	20.00	20.00	0.00	0.00	5657.92	10989.15	0.00	
	Ĺ	5796.08	11108.08	19.00	19.00	0.00	0.00				VISUAL
	L	5888.80	10985.07	20.00	20.00	0.00	0.00	5888.80	10987.92	0.00	
+	L	5756.21	11034.52	19.00	19.00	0.00	0.00	6000.00	11167.10	0.00	
	L	6102.69 5967.00	11166.50 11046.58	20.00	20.00	284.04 0.00	0.00	6099.92	11167.19	0.00	
1	L	6028.20	11287.04	20.00	20.00	180.00	0.00	6028.20	11284.19	0.00	
1	L	6026.96	11098.32	19.00	19.00	0.00	0.00	1			
	L	5953.71	11238.82	20.00	20.00	90.00	0.00	5956.56	11238.82	0.00	
	L	5784.64 6000.07	11192.46 11166.19	20.00	20.00	155.32 0.00	0.00	5785.83	11189.87	0.00	
1	L	6073.63	11233.26	19.00	19.00	0.00	0.00				
1	S	5896.08	11157.00	10.00	10.00	180.00	0.00	5896.08	11157.00	0.00	
	S	5896.43	11224.13	10.00	10.00	0.00	0.00	5896.43	11224.13	0.00	
	S	5861.99	11192.48	10.00	10.00	270.00	0.00	5861.99	11192.48	0.00	
	S S	5929.47 5861.99	11192.39 11212.55	10.00	10.00	90.00 270.00	0.00	5929.47 5861.99	11192.39 11212.55	0.00	
	S	5929.47	11212.35	10.00	10.00	90.00	0.00	5929.47	11212.33	0.00	
	S	5861.99	11172.40	10.00	10.00	270.00	0.00	5861.99	11172.40	0.00	
	S	5929.47	11172.31	10.00	10.00	90.00	0.00	5929.47	11172.31	0.00	
-	S S	5916.15 5916.50	11157.00 11224.13	10.00	10.00	180.00 0.00	0.00	5916.15 5916.50	11157.00 11224.13	0.00	
	S	5876.01	111224.13	10.00	10.00	180.00	0.00	5916.30	11224.13	0.00	
	S	5876.36	11224.13	10.00	10.00	0.00	0.00	5876.36	11224.13	0.00	
	L	5899.31	11107.46	21.00	21.00	0.00	0.00	1			
						1	1	"Las	- 1		
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	0.30.30 0.40.50 0.40.50 0.50.50 0.50.50 1.11.41 1.11.41 1.72.02 2.82.84 4.44.15 2.82.84 4.44.15 2.82.84 4.44.15 2.82.84 1.72.02 2.82.84 4.44.15 2.82.84 1.74.5 1.745.80 1.755.80 1.745.8	30 40 50 50 80 40 50 70 51 9 40 50 70 51 9 40 50 70 51 9 50 70 91 11 4 70 91 21 51 9 10 31 72 12 5 31 82 53 13 4 40 55 76 66 2 31 82 53 13 4 40 56 76 66 2 30 60 60 28 46 2 30 60 60 28 46 2 30 60 60 2 2 2 2 30 60 60 2 3 2 2 3 2 30 60 60 2 3 3 3 3 3 3 3 3 3 3 3	0 94 11 21 21 1 31 51 71 51 1 72 02 72 63 2 32 63 04 04 2 33 63 04 04 2 33 63 04 04 2 34 65 05 85 5 4 13 22 92 5 4 13 23 23 5 4 10 4 5 4 10 4	1 1 <td>1,71,51,31 2,92,31,81 4,93,92,72 7,35,94,93 9,37,95,94 9,37,76 7,29,00,28 6,28,510,1 4,15,98,31 4,15,98,31 4,15,98,31 4,15,98,31 4,15,98,31 4,15,98,31 4,15,98,31 5,16,97,98 5,10,97,98 5,10,97,99 5,10,97,99 5,10,97,99 5,10,97,99 5,10,97,99 5,10,97,99 5,10,97,99 5,10,97,99 5,10,97,99 5,10,90 5,10,</td> <td>10 90 90 70 70 51 31 11 01 00 11 71 51 41 41 12 42 12 02 02 55 54 94 94 74 48 78 97 16 54 13 12 00 8 65 14 12 51 8 05 14 25 88 28 97 24 25 88 28 97 25 80 26 97 27 98 28 97 28 97</td> <td>50.50.50 50.50.50 51.21.11 51.21.11 52.52.01 53.02.31 53.02.31 53.02.01 53.02.</td> <td>70 00 50 40 00 90 70 50 71 30 90 50 81 30 90 50 51 10 80 50 51 10 80 50 51 10 70 50 51 10 70 50 51 10 70 50 51 20 70 50 51 20 90 50</td> <td></td> <td></td> <td>M, 2</td>	1,71,51,31 2,92,31,81 4,93,92,72 7,35,94,93 9,37,95,94 9,37,76 7,29,00,28 6,28,510,1 4,15,98,31 4,15,98,31 4,15,98,31 4,15,98,31 4,15,98,31 4,15,98,31 4,15,98,31 5,16,97,98 5,10,97,98 5,10,97,99 5,10,97,99 5,10,97,99 5,10,97,99 5,10,97,99 5,10,97,99 5,10,97,99 5,10,97,99 5,10,97,99 5,10,90 5,10,	10 90 90 70 70 51 31 11 01 00 11 71 51 41 41 12 42 12 02 02 55 54 94 94 74 48 78 97 16 54 13 12 00 8 65 14 12 51 8 05 14 25 88 28 97 24 25 88 28 97 25 80 26 97 27 98 28 97 28 97	50.50.50 50.50.50 51.21.11 51.21.11 52.52.01 53.02.31 53.02.31 53.02.01 53.02.	70 00 50 40 00 90 70 50 71 30 90 50 81 30 90 50 51 10 80 50 51 10 80 50 51 10 70 50 51 10 70 50 51 10 70 50 51 20 70 50 51 20 90 50			M, 2
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	Card La			1000	Luminaire Locations
Description	Number Lamps	Lamp Output	LLF	Input Power	Location Aim No. Label X Y Z MH Orientation Tilt X Y Z
Memphis style housings Standard housing, 4000 series CCT Auto-sensing voltage, Type IV, Medium, (Standard or Uplight)	1	28204	0.9	214.54	1 L 5657.92 10986.30 20.00 20.00 0.00 0.00 5657.92 10989.15 0.00 2 L 5796.08 11108.08 19.00 19.00 0.00 0.00 5888.80 10987.92 0.00 2 L 5888.80 10985.07 20.00 20.00 0.00 5888.80 10987.92 0.00
Wallpack Full Cutoff LED, LED Performance Package P20, 4000 series CCT, Voltage, Forward Throw Medium	1	12125	0.9	115	3 L 5756.21 11034.52 19.00 19.00 0.00 0.00 0.00 3 L 6102.69 11166.50 20.00 20.00 284.04 0.00 6099.92 11167.19 0.00 4 L 5967.00 11046.58 19.00 19.00 0.00 0.00 0.00
Memphis style housings Standard housing, 4000 series CCT Auto-sensing voltage, Type IV, Medium, (Standard or Uplight)	1	28204	0.9	429.08	4 L 6028.20 11287.04 20.00 20.00 180.00 0.00 6028.20 11284.19 0.00 5 L 6026.96 11098.32 19.00 19.00 0.00 0.00 0.00 5 5 L 5953.71 11238.82 20.00 20.00 90.00 0.00 5956.56 11238.82 0.00 6 L 5784.64 11192.46 20.00 20.00 155.32 0.00 5785.83 11189.87 0.00
Type IV, Medium, (Standard of Oplight)					6 L 6000.07 11166.19 19.00 19.00 0.00 0.00 0.00 7 L 6073.63 11233.26 19.00 19.00 0.00 0.00 0.00 1 S 5896.08 11157.00 10.00 180.00 0.00 5896.08 11157.00 0.00
					4 S 5896.43 11224.13 10.00 10.00 0.00 5896.43 11224.13 0.00 29 S 5861.99 11192.48 10.00 10.00 270.00 0.00 5861.99 11192.48 0.00 30 S 5929.47 11192.39 10.00 10.00 90.00 0.00 5929.47 11192.39 0.00 33 S 5861.99 11212.55 10.00 10.00 270.00 0.00 5861.99 11212.55 0.00
Max/Min Avg/Min					34 S 5929.47 11212.46 10.00 10.00 90.00 0.00 5929.47 11212.46 0.00 35 S 5861.99 11172.40 10.00 10.00 270.00 0.00 5861.99 11172.40 0.00 36 S 5929.47 11172.31 10.00 10.00 90.00 0.00 5929.47 11172.31 0.00 37 S 5916.15 11157.00 10.00 10.00 180.00 0.00 5916.15 11157.00 0.00
N/A N/A					38 S 5916.50 11224.13 10.00 10.00 0.00 5916.50 11224.13 0.00 39 S 5876.01 11157.00 10.00 10.00 180.00 0.00 5876.01 11157.00 0.00 40 S 5876.36 11224.13 10.00 10.00 0.00 5876.36 11224.13 0.00
40.2:1 10.0:1					1 L 5899.31 11107.46 21.00 21.00 0.00 0.00
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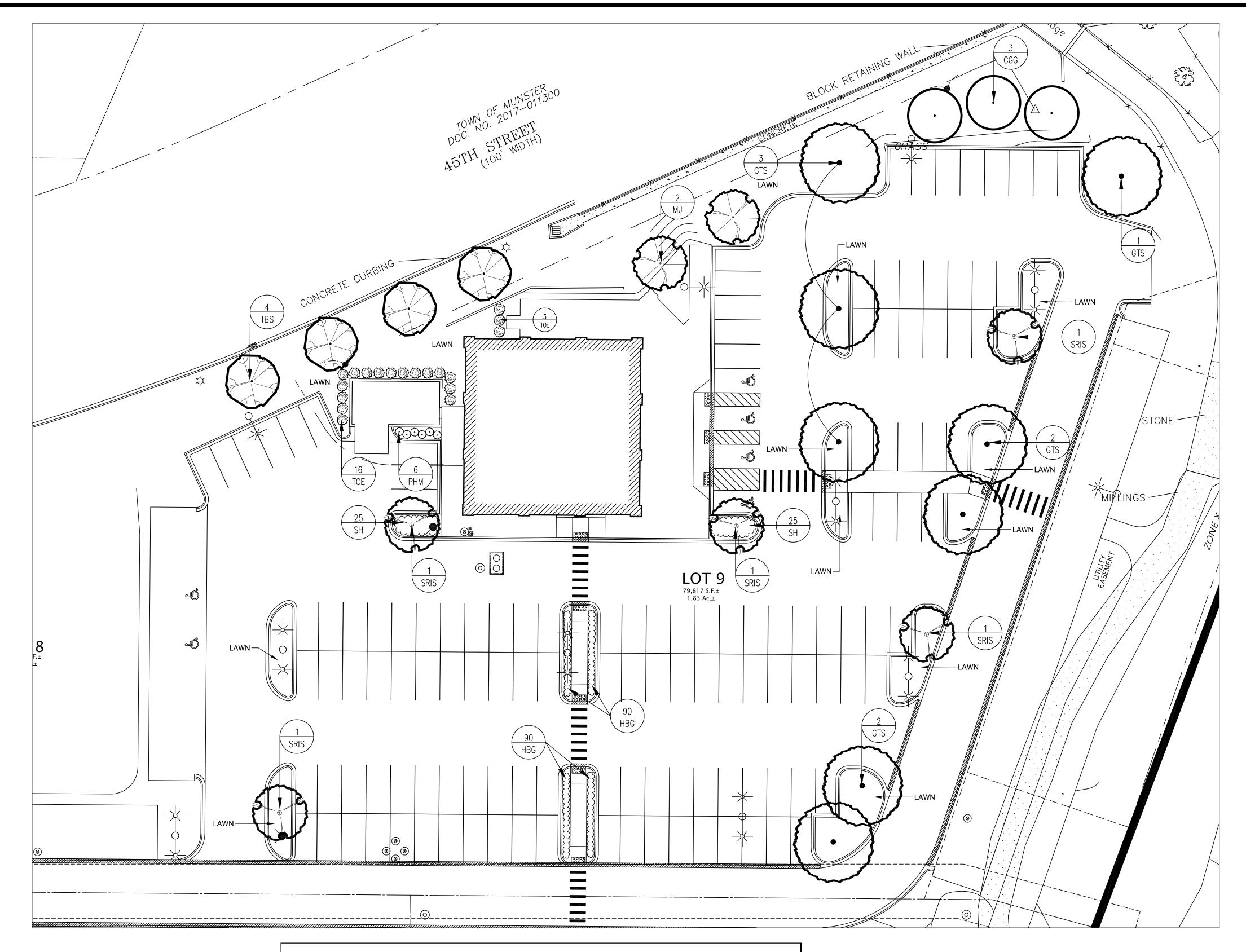
1155 Troutwine Road Crown Point, IN 46307 P: (219) 662-7710 F: (219) 662-2740 www.dvgteam.com

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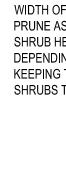
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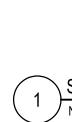
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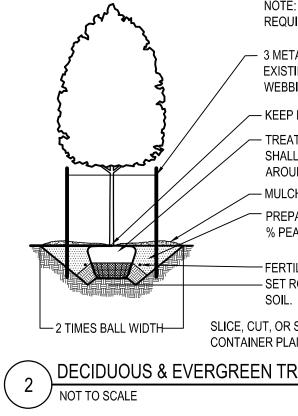
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	PLANT LIST						
Symbol	QTY	Botanical Name	Common Name	Size			
Decidiou	is Shad	e Trees					
GTS	8	Gleditsia triacanthos f. inermis 'Skyline'	Skyline Honey Locust	2.5" B&B			
TSB	5	Taxodium distichum 'Mickelson' Shawnee Brave Bald Cypress					
Decidiou	ıs Orna	mental Trees					
CGG	3	Cornus mas 'Golden Glory'	Golden Glory Dogwood	6' B&B			
MJ	3	Magnolia x Jane	Jane Magonlia	6' B&B			
SRIS	5	Syringa reticulata 'Ivory Silk'	Ivory Silk Lilac	2.5" B&B			
Evergree	en Tree	s & Broadleaf Evergreen Shrubs					
TOS	16	Thuja occidentalis 'Smaragard'	Emerald Green Arborvitae	4' B&B			
Orname	ntal Gra	ass					
PHM	6	Panicum virgatum 'Heavy Metal'	Heavy Metal Switchgrass	#1			
SH	50	Sporobolus heterolepsis	Prairie Dropseed	#1			
Perennia	al						
HGB	180	Hemerocallis 'Going Bananas'	Going Bananas Daylily	#1			

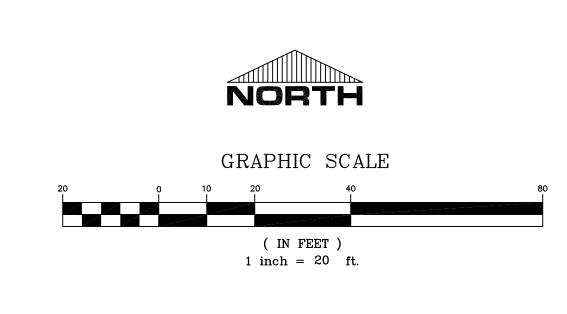




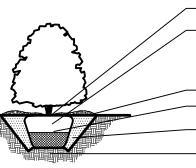


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LOCATE ALL UNDERGROUND UTILITIES PRIOR TO DIGGING. SHRUB PIT WIDTH TO BE TWO TIMES THE WIDTH OF THE ROOT BALL. PRUNE OFF ALL DEAD, BROKEN OR SCARRED BRANCHES, AND SHAPE PRUNE AS DIRECTED BY THE LANDSCAPE ARCHITECT. LOCATE ROOT FLARE IN ROOT BALL AND SET SHRUB HEIGHT SO THAT ROOT FLARE IS FLUSH OR SLIGHTLY HIGHER THAN FINISH GRADE DEPENDING ON EXISTING SOIL CONDITIONS. WATER IN THE PLANTING MIX THOROUGHLY, WHILE KEEPING THE SHRUB PLUMB. STRAIGHTEN SHRUB IF SETTLING OCCURS. MULCH LIMITS FOR SHRUBS TO EXTEND TO ALL EDGES OF PLANTING BEDS, SEE PLANS FOR BED LAYOUTS.



- KEEP MULCH OFF OF THE ROOT FLARE. TREATED OR NYLON TWINE AROUND TRUNK SHALL BE REMOVED. ANY PLASTIC WRAP AROUND THE ROOTBALL REMOVED.

– MULCH 3" DEEP. TYPE PER SPECIFICATIONS. - ROOT BALL

PREPARED BACKFILL OF 85% EXISTING SOIL & 15 % PEAT OR COMPOST - SET ROOT BALL ON UNEXCAVATED OR TAMPED SOIL.

SLICE, CUT, OR SEPARATE EXTERIOR ROOTS ON ROOT-BOUND CONTAINER PLANTS TO PROMOTE ROOT GROWTH.

SHRUB PLANTING DETAIL NOT TO SCALE

LOCATE ALL UNDERGROUND UTILITIES PRIOR TO DIGGING. TREE PIT WIDTH TO BE Two TIMES THE

WIDTH OF THE ROOT BALL. PRUNE OFF ALL DEAD, BROKEN OR SCARRED BRANCHES, AND SHAPE PRUNE AS DIRECTED BY THE LANDSCAPE ARCHITECT. LOCATE ROOT FLARE IN ROOT BALL AND SET TREE HEIGHT SO THAT ROOT FLARE IS FLUSH OR SLIGHTLYI HIGHER THAN FINISH GRADE DEPENDING ON EXISTING SOIL CONDITIONS. WATER IN THE PLANTING MIX THOROUGHLY, WHILE KEEPING THE TREE PLUMB. STRAIGHTEN TREE IF SETTLING OCCURS.

> NOTE: STAKING OF DECIDUOUS TREES NOT REQUIRED UNLESS TREE WILL NOT STAY PLUMB 3 METAL STAKES INSERTED DOWN INTO

EXISTING SOIL. TREE TO BE TIED WITH TREE TIE WEBBING (GREEN).

- KEEP MULCH OFF OF THE ROOT FLARE OF TREE. - TREATED OR NYLON TWINE AROUND TRUNK SHALL BE REMOVED. ANY PLASTIC WRAP

AROUND THE ROOTBALL REMOVED. - MULCH 3" DEEP. TYPE PER SPECIFICATIONS. PREPARED BACKFILL OF 85% EXISTING SOIL & 15 % PEAT OR COMPOST

- FERTILIZER PELLETS -- 2 YEAR RELEASE – SET ROOT BALL ON UNEXCAVATED OR TAMPED

SLICE, CUT, OR SEPARATE EXTERIOR ROOTS ON ROOT-BOUND CONTAINER PLANTS TO PROMOTE ROOT GROWTH.

∖ DECIDUOUS & EVERGREEN TREE PLANTING DETAIL

LOCATE ALL UNDERGROUND UTILITIES PRIOR TO DIGGING. AMEND PLANTING BED SOIL WITH COMPOST PRIOR TO PLANT INSTALLATION. BED HEIGHT IS TO BE 2" ABOVE FINISH GRADE AND WELL DRAINED. MULCH LIMITS FOR PERENNIAL AND GROUNDCOVER BEDS TO EXTEND TO ALL EDGES OF THE BEDS, SEE PLANS FOR BED LAYOUTS.

	ALL BED PLANTINGS SHALL BE INSTALLED WITH PLANTS OFFSET IN A TRIANGULAR FASHION.
	TYPICAL SPACING, AS SPECIFIED IN THE PLANT LIST. PERENNIALS SHALL BE PLACED WITH THEIR CENTERS NO CLOSER THAN 12" FROM EDGE OF BED. GROUNDCOVERS SHALL BE PLACED WITH THEIR CENTERS NO CLOSER THAN 6" FROM EDGE OF BED.
<u>Plan view</u>	MULCH, 2" DEPTH AROUND PERENNIALS, GRASSES, AND GROUNDCOVERS.
	MIN. 3" COMPOST ROTOTILLED INTO SOIL TO A MIN. DEPTH OF 6". DO NOT COMPACT UNNECESSARILY AFTER PLANTING.
<u>SECTION</u>	SLICE CUT OR SEPARATE EXTERIOR ROOTS ON ROOT-BO

SLICE, CUT, OR SEPARATE EXTERIOR ROOTS ON ROOT-BOUND CONTAINER PLANTS TO PROMOTE ROOT GROWTH.

NOT TO SCALE





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Notes:

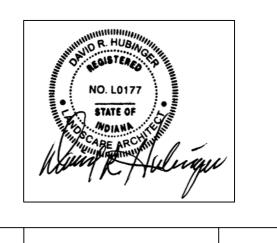
Stand alone trees and Landscape Areas to have Shredded Hardwood Bark Mulch 3" Deep w/ Pre-emergent herbicide and have spade dug edge.

All disturbed lawn areas to be restored w/ 4" of topsoil, Seed w/ HLC Sunny Mix or approved equal w/ DS-75 Erosion Control Blanket.

Starter fertilizer to be applied at installation and post fertilizer application applied 30-45 days later with a minimum of 1# of Nitrogen per 1000 SF and 50% being slow release.

ALTERNATE:

All planting beds to have Edgestone Edging, Fabric and Large Multi-Color River Rock 3" Deep. All stand alone trees to remain mulch.



Revisions:



Date

210 East 113th Avenue Crown Point, Indiana Phone: 219-662-9911 www.hubingers.com





Windy City Social – South View



Windy City Social – North View



Windy City Social – South East View