

# LARKSPUR PHASE 2

## **CONSTRUCTION PLANS**

## THE KELLEY GROUP

INDIANAPOLIS, INDIANA 46220

## SCHNEIDER ENGINEERING CORP.

3020 NORTH POST ROAD

INDIANAPOLIS, INDIANA 46226

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## Schneider Engineering Corporation CIVIL ENGINEERS \_\_\_\_\_ LAND SURVEYORS

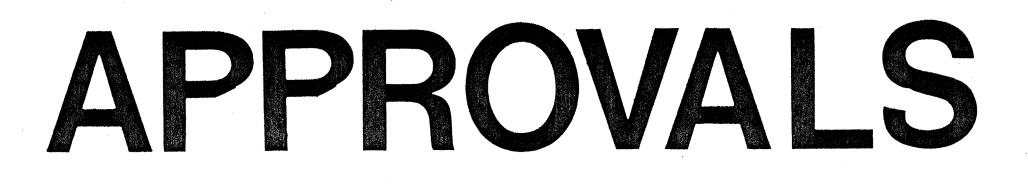
JOHN V. SCHNEIDER

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# REVISIONS

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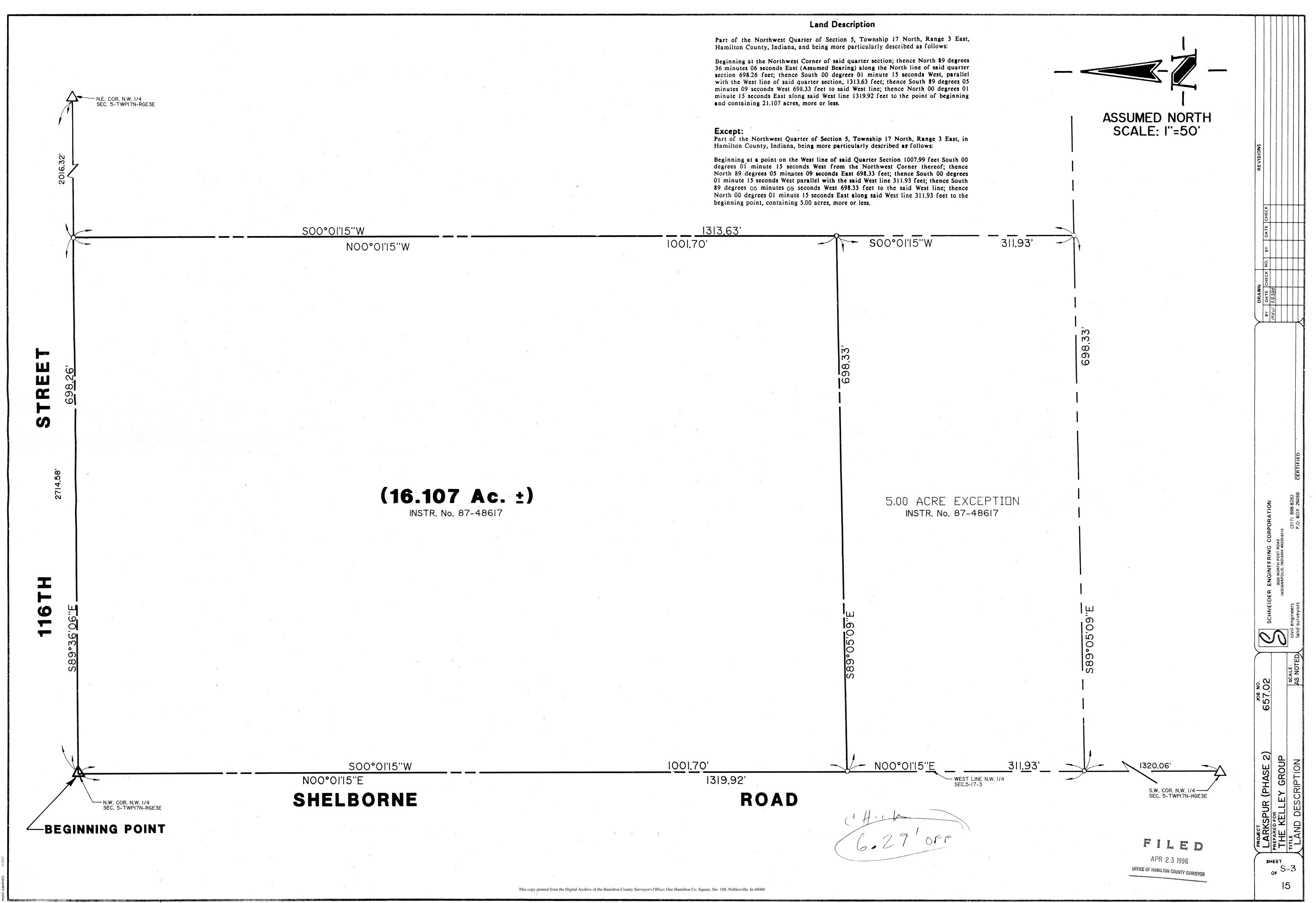
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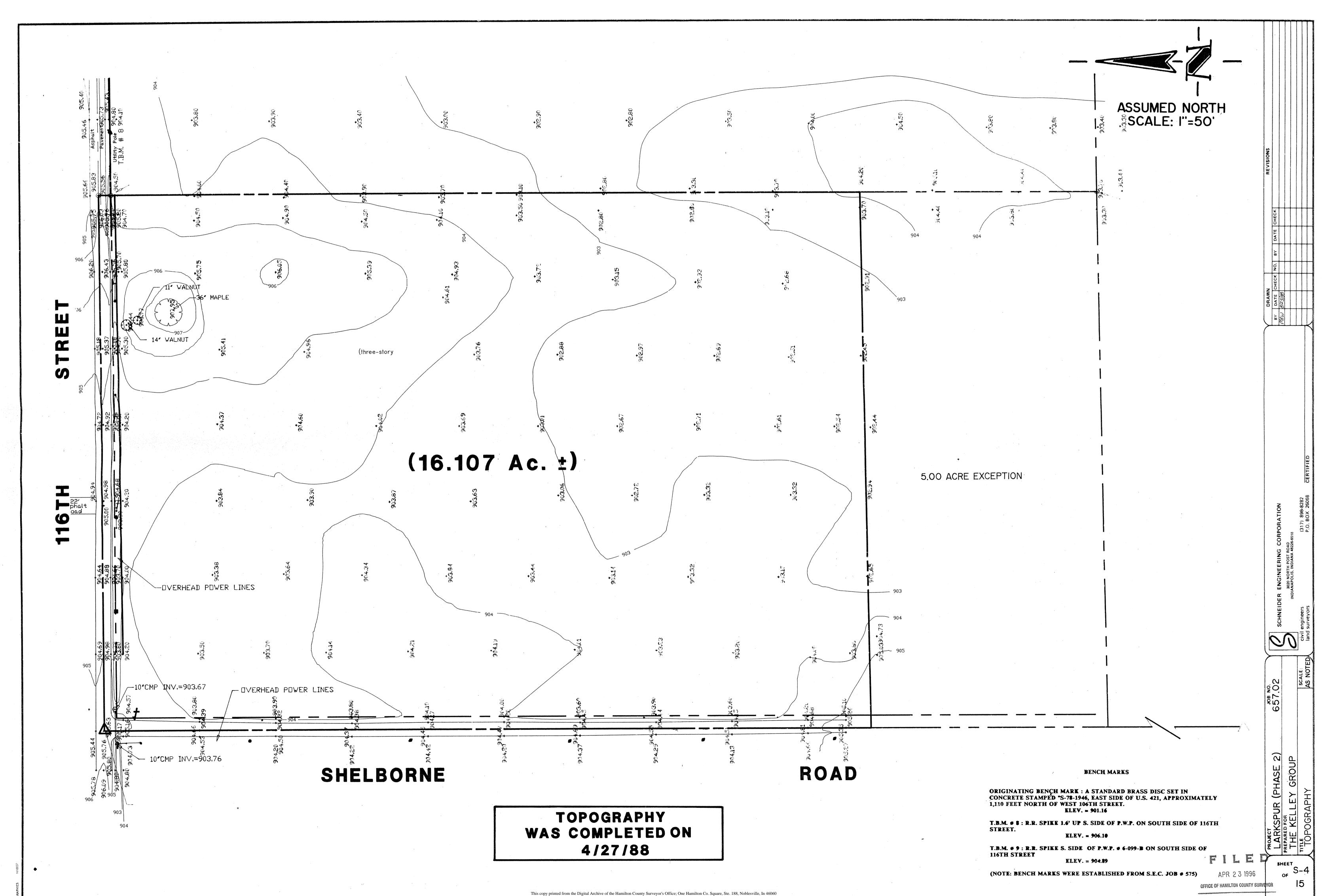
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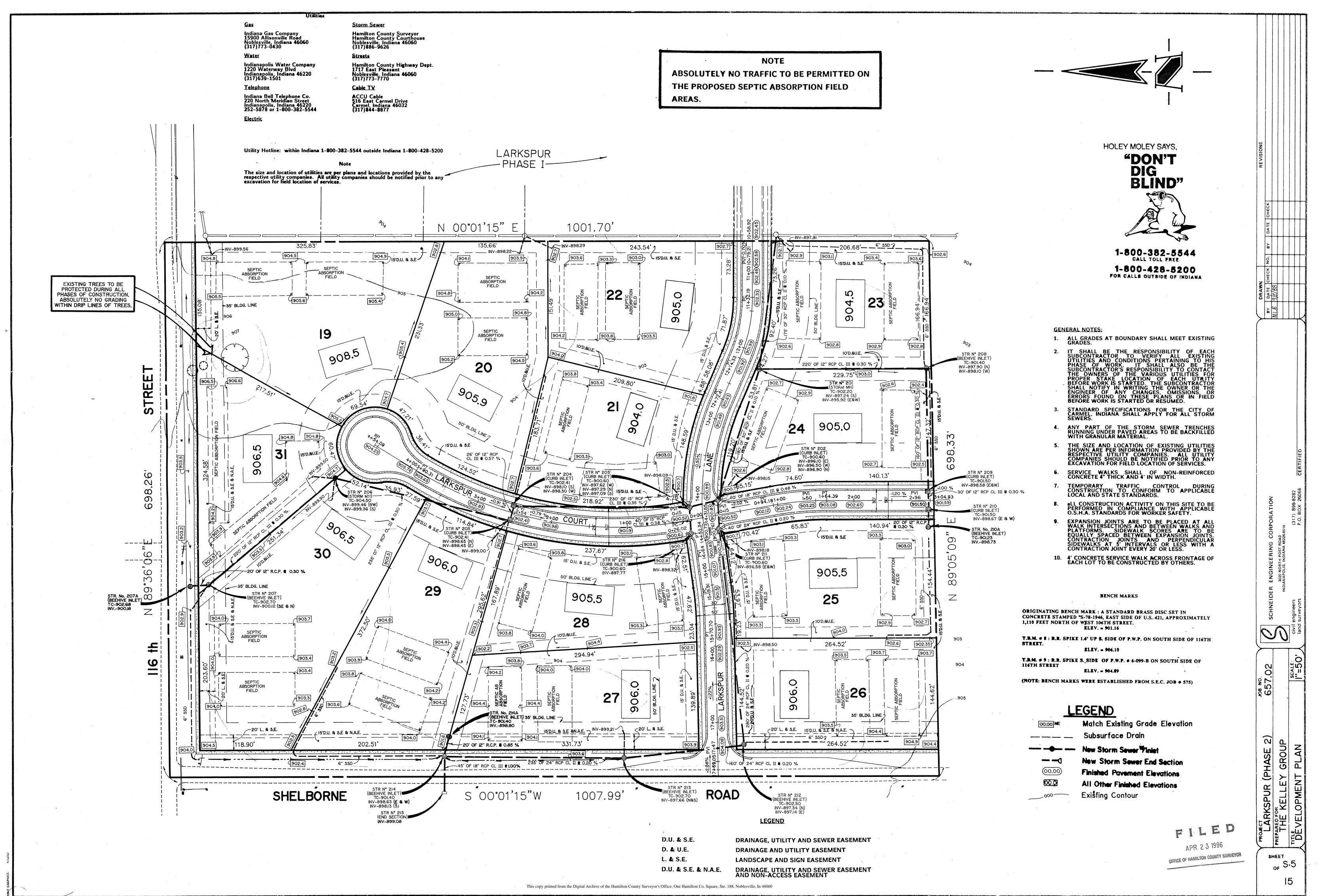
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SCHNEIDER ENGINEERING CORPORATION 3020 NORTH POST ROAD INDIANAPOLIS, INDIANA 46225-6518

(317) 898-8282 P.O. BOX 26068







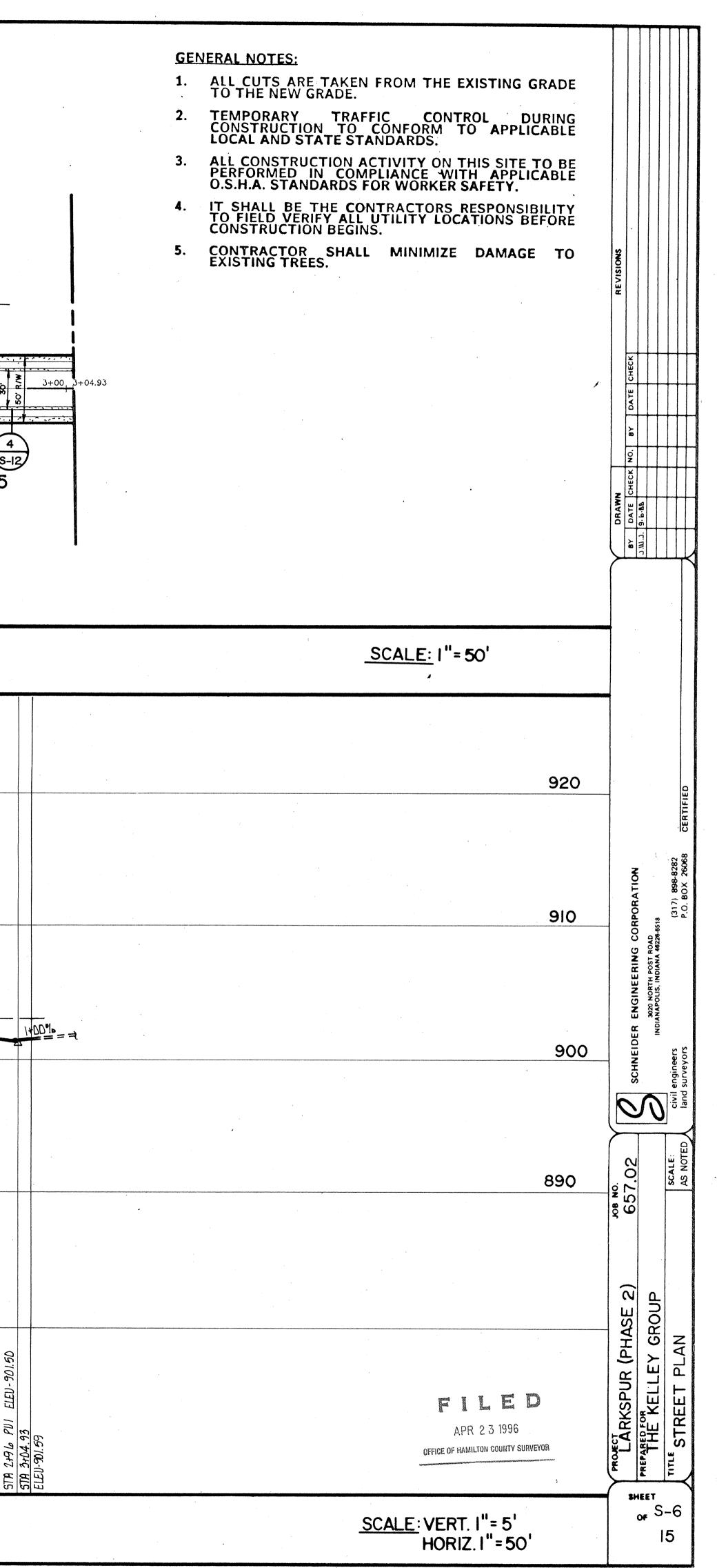
HOLEY MOLEY SAYS, **"DON'T** DIG **BLIND**" 19 1-800-382-5544 CALL TOLL FREE 1-800-428-5200 FOR CALLS OUTSIDE OF INDIANA 31 S-12 **BENCH MARKS** 1 30 ORIGINATING BENCH MARK : A STANDARD BRASS DISC SET IN CONCRETE STAMPED "S-78-1946, EAST SIDE OF U.S. 421, APPROXIMATELY 1,110 FEET NORTH OF WEST 106TH STREET. **ELEV.** = 901.16T.B.M. # 8 : R.R. SPIKE 1.6' UP S. SIDE OF P.W.P. ON SOUTH SIDE OF 116TH STREET. ELEV. = 906.10T.B.M. # 9 : R.R. SPIKE S. SIDE OF P.W.P. # 6-099-B ON SOUTH SIDE OF **116TH STREET** ELEV. = 904.89\_\_\_\_\_ 903 (NOTE: BENCH MARKS WERE ESTABLISHED FROM S.E.C. JOB # 575) 920 1 910 +0.91% 900 • 890 0+75 ELEV-903.51 0+50 ELEV-903.28 0+33 ELEV.- 304.04 5TA 4+54,09 RP ELEV- 904.73 5TA 4+00 ELEV.- 903.

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## PROFILE OF STREET

**UP VIINLL I** se of the Hamilton County Surveyore Office, One Hamilton Co. Square, Ste. 188, Noblesville, In 46060



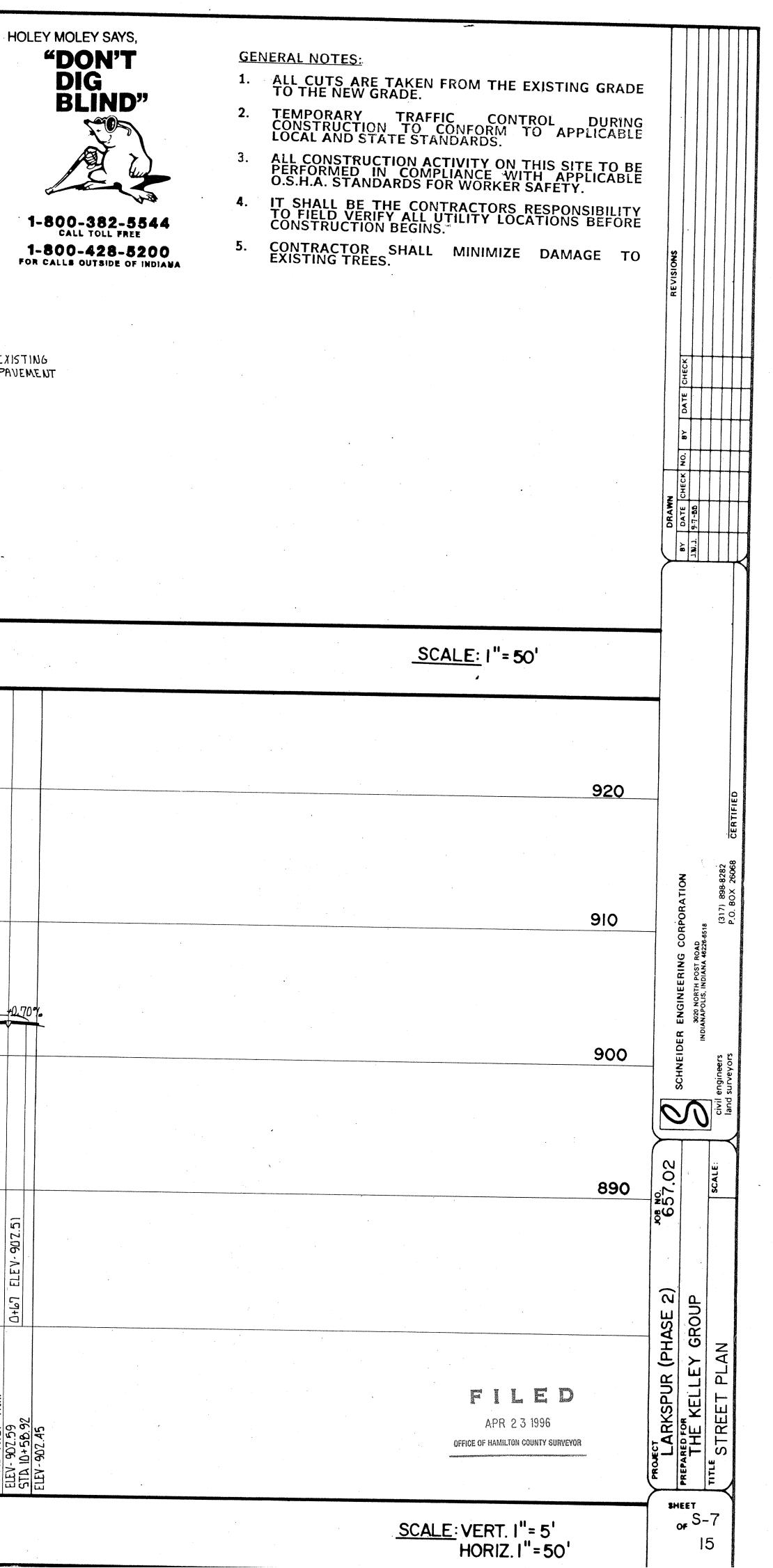
**BENCH MARKS** ORIGINATING BENCH MARK : A STANDARD BRASS DISC SET IN CONCRETE STAMPED "S-78-1946, EAST SIDE OF U.S. 421, APPROXIMATELY 1,110 FEET NORTH OF WEST 106TH STREET. ELEV. = 901.16T.B.M. # 8 : R.R. SPIKE 1.6' UP S. SIDE OF P.W.P. ON SOUTH SIDE OF 116TH STREET. ELEV. = 906.10T.B.M. # 9 : R.R. SPIKE S. SIDE OF P.W.P. # 6-099-B ON SOUTH SIDE OF **116TH STREET** ELEV. = 904.89ROAD 27 903 (NOTE: BENCH MARKS WERE ESTABLISHED FROM S.E.C. JOB # 575) S-139.89' FOR DETAIL OF ENTRANCE A ..... 17+69.05 17+00 LARKSPUR 16+0 SEE SHEET S-8 2' KOLL CURB 144.52' 4' CONC. WA BORNE P.1. STA. -띺 26 ភ 920 910 900 890 0+33 ELEV-903.95 ELEV L9+0 0+67 ELEV. M 5TA 17+69.05 ELEV - 904.58 5TA 17+47 P ELEV - 904.12 3TA 17+00 ELEV.-903.59

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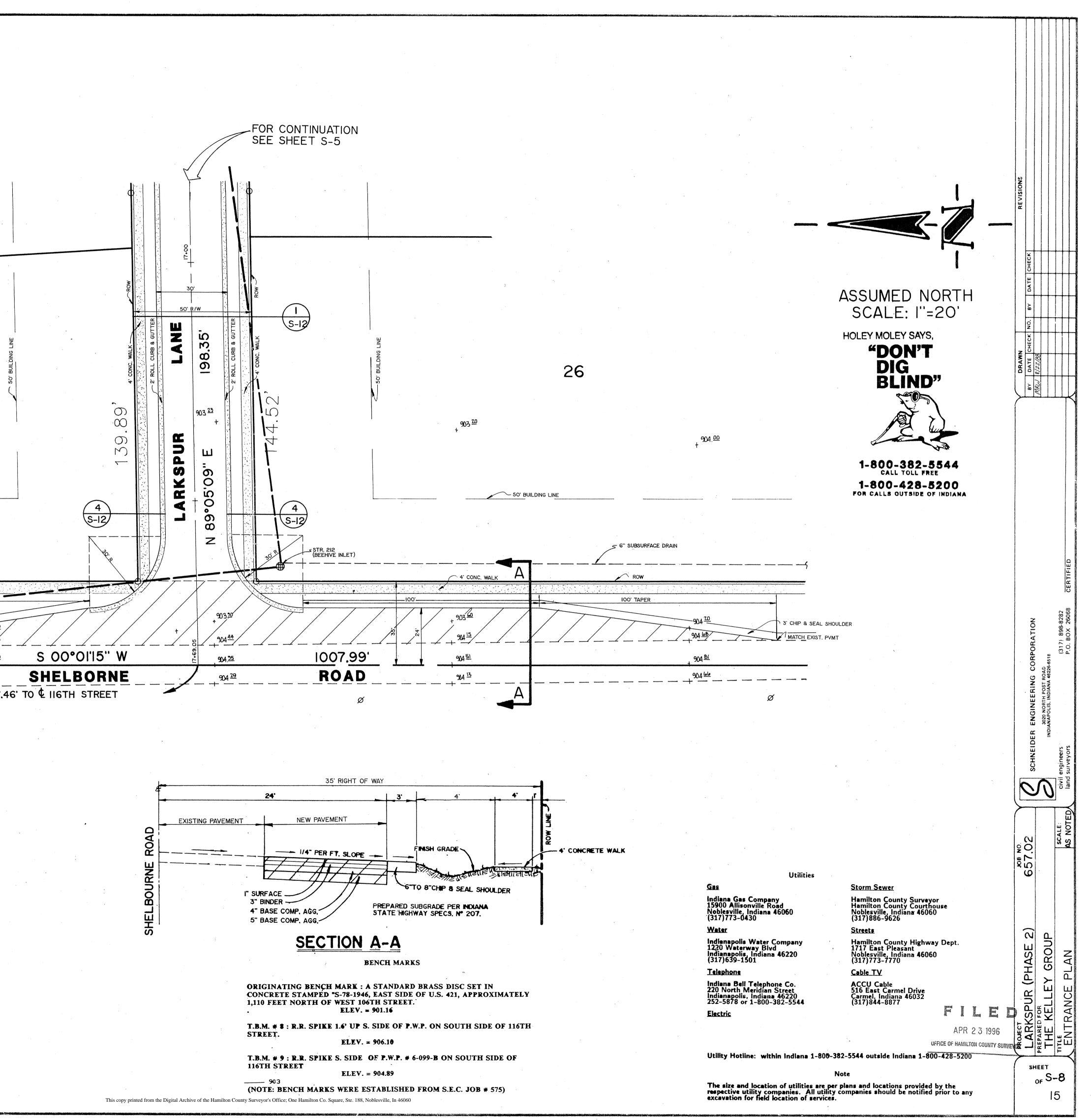
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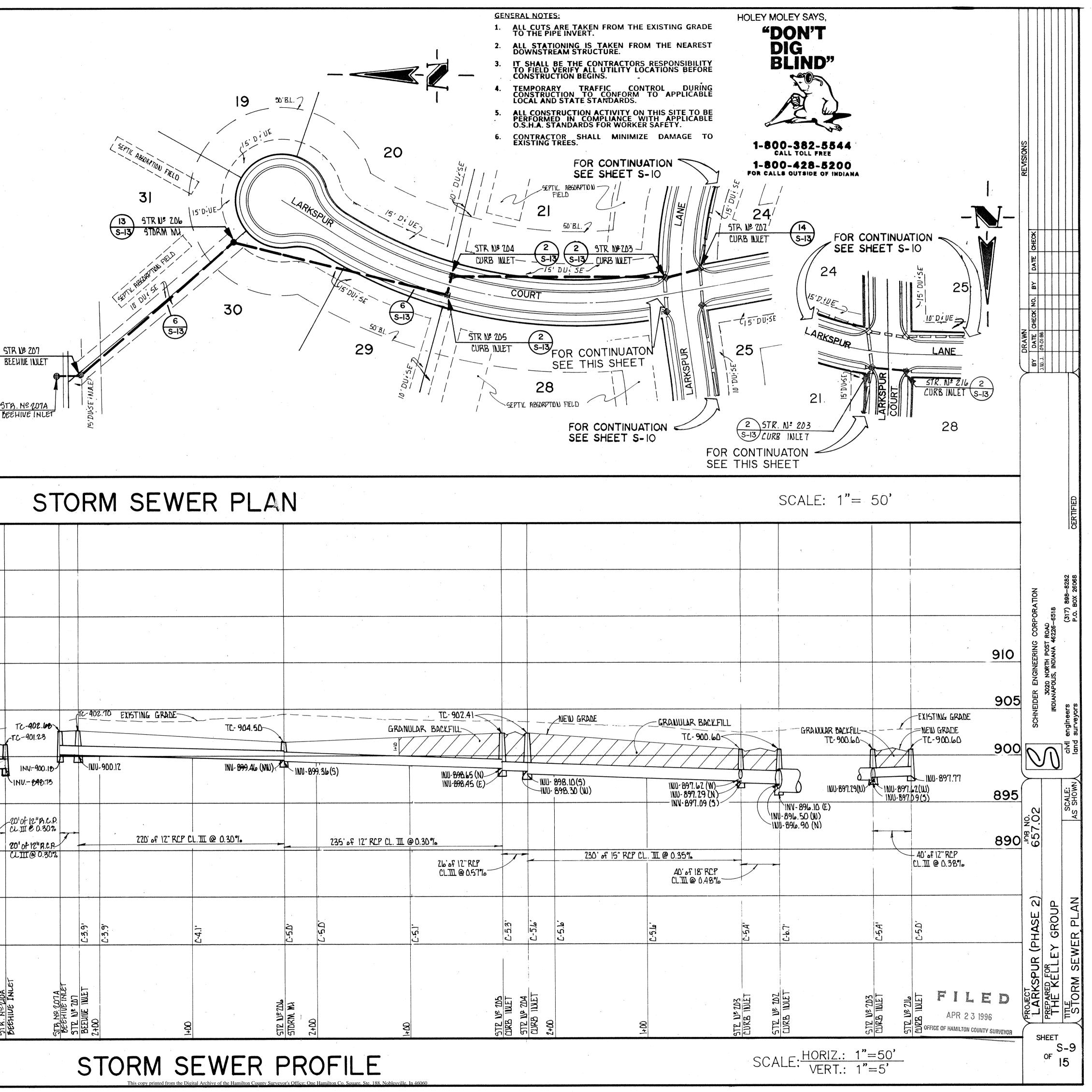
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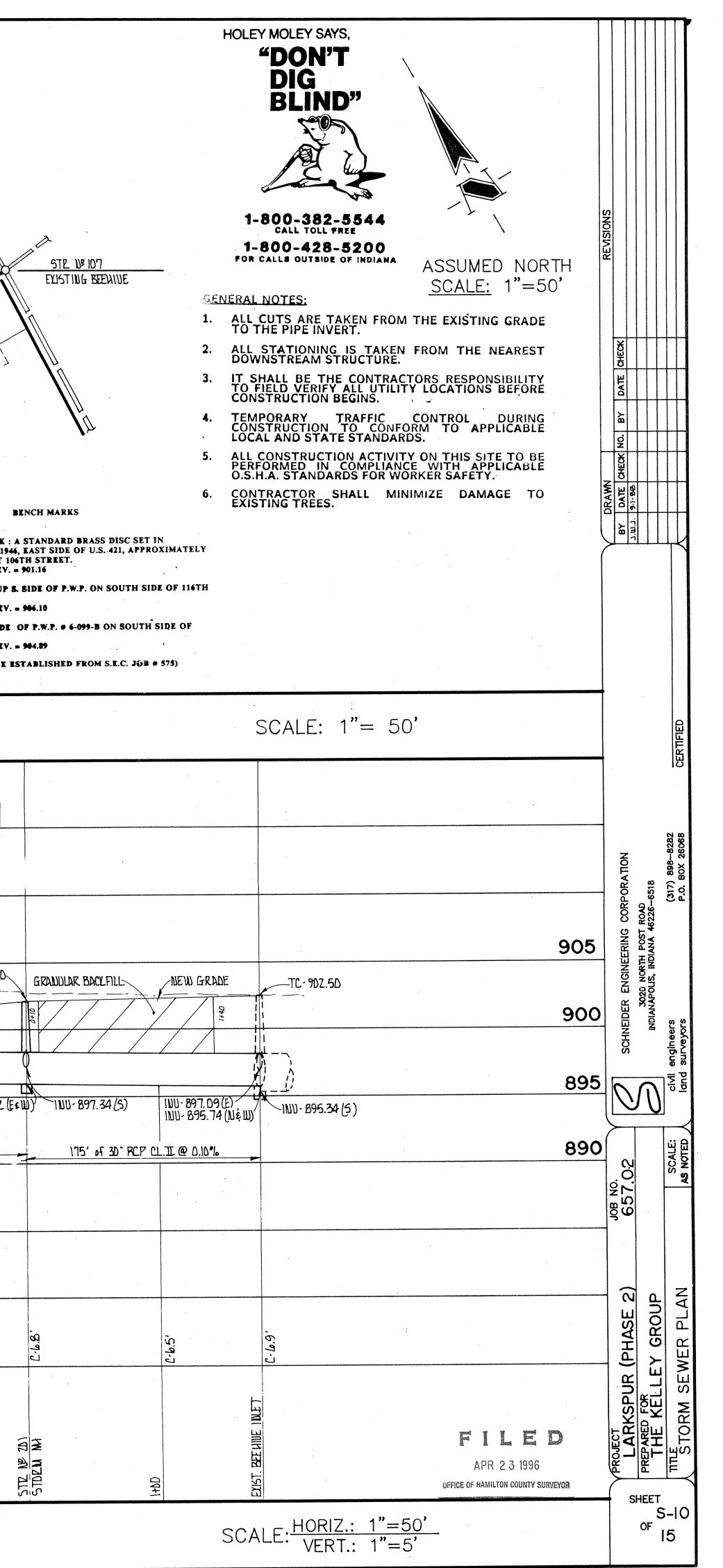


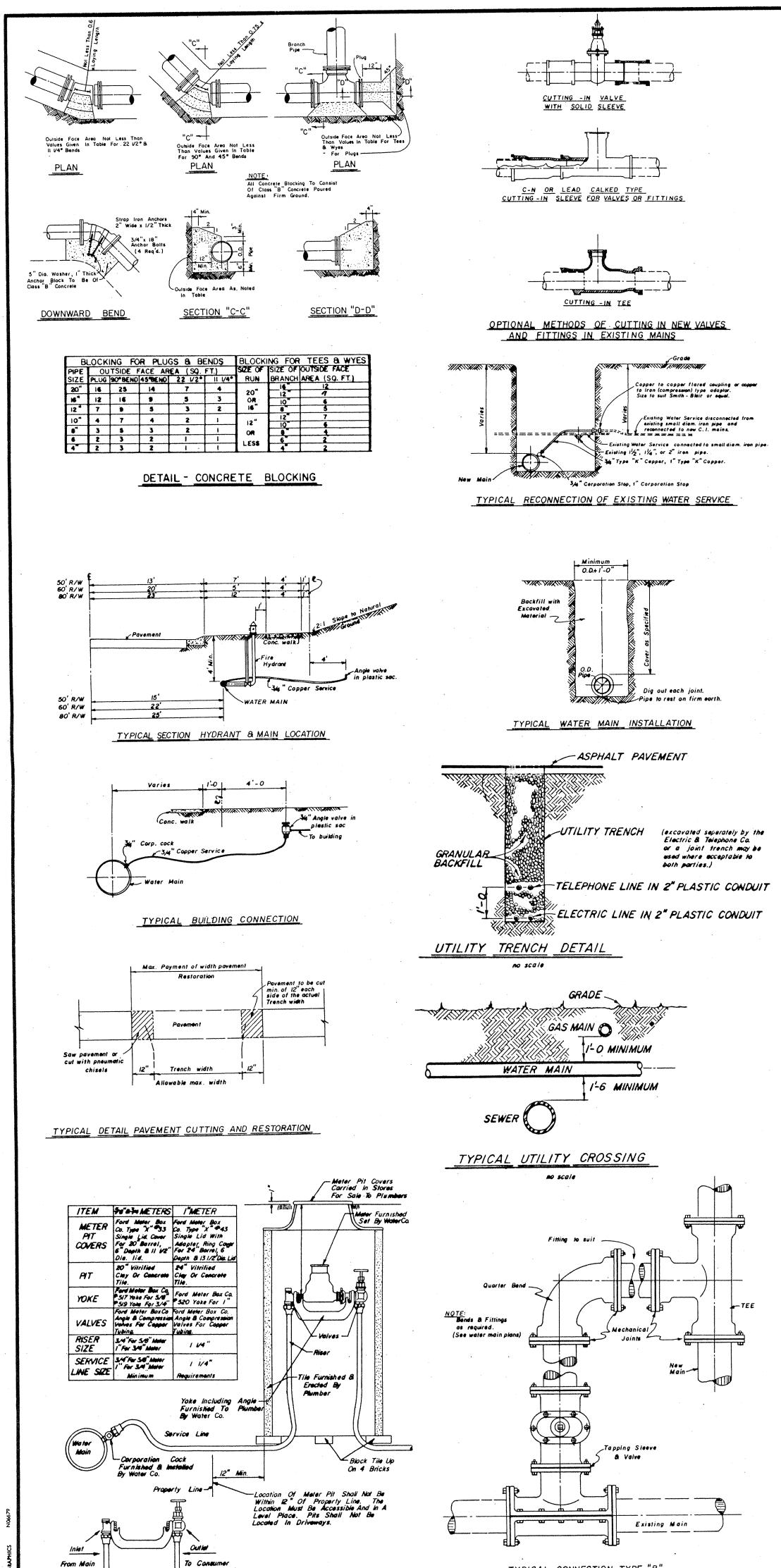
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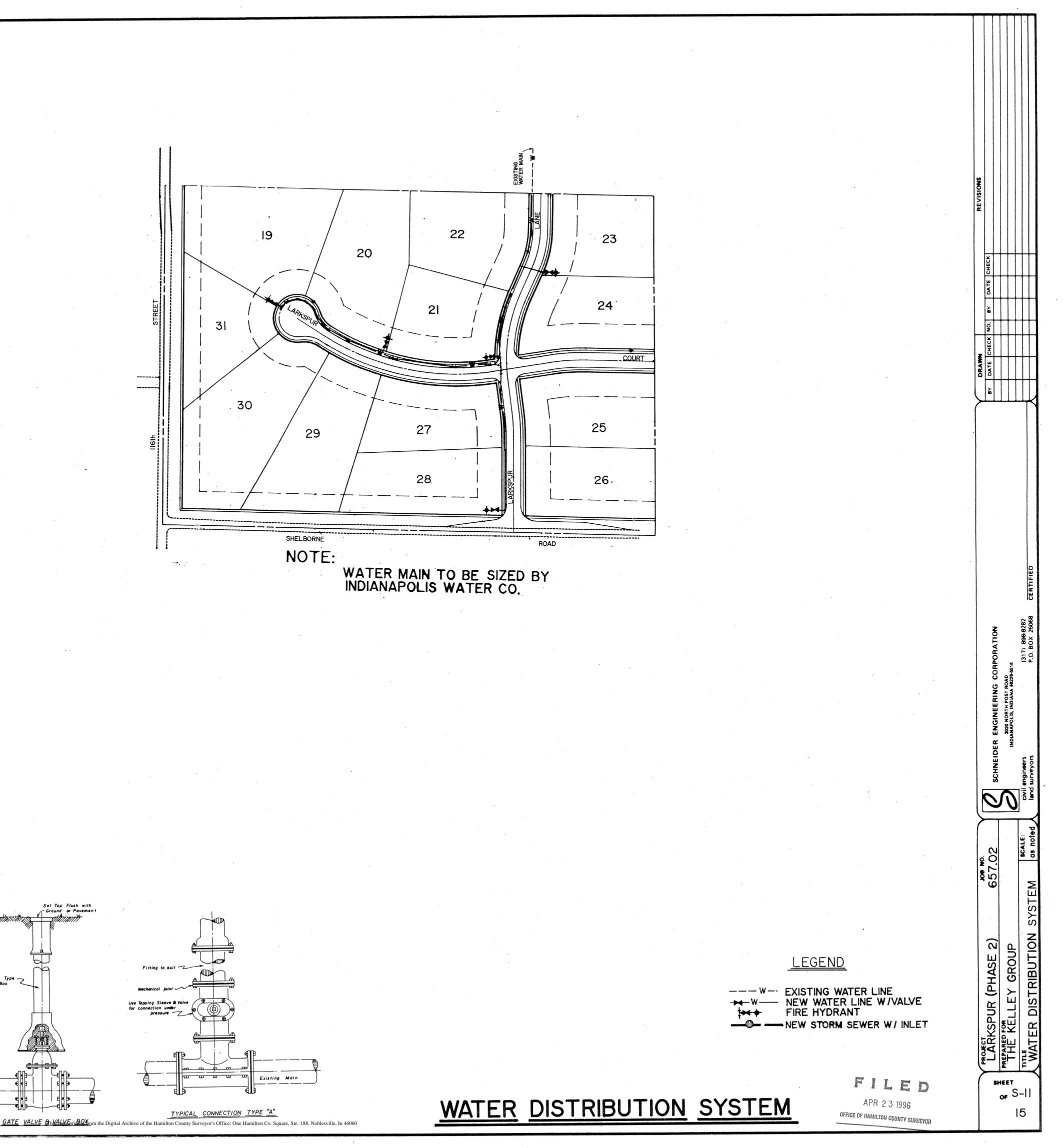
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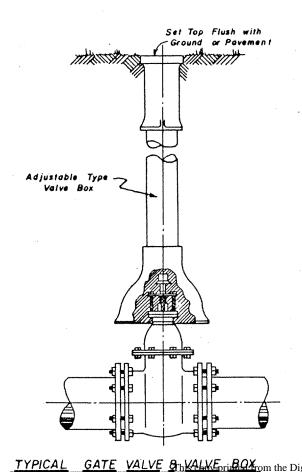
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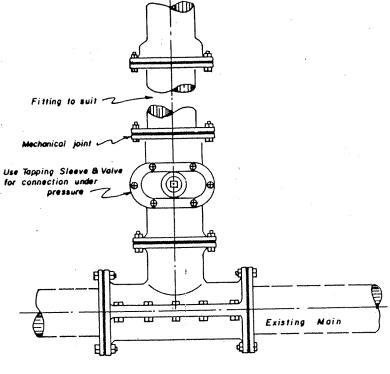




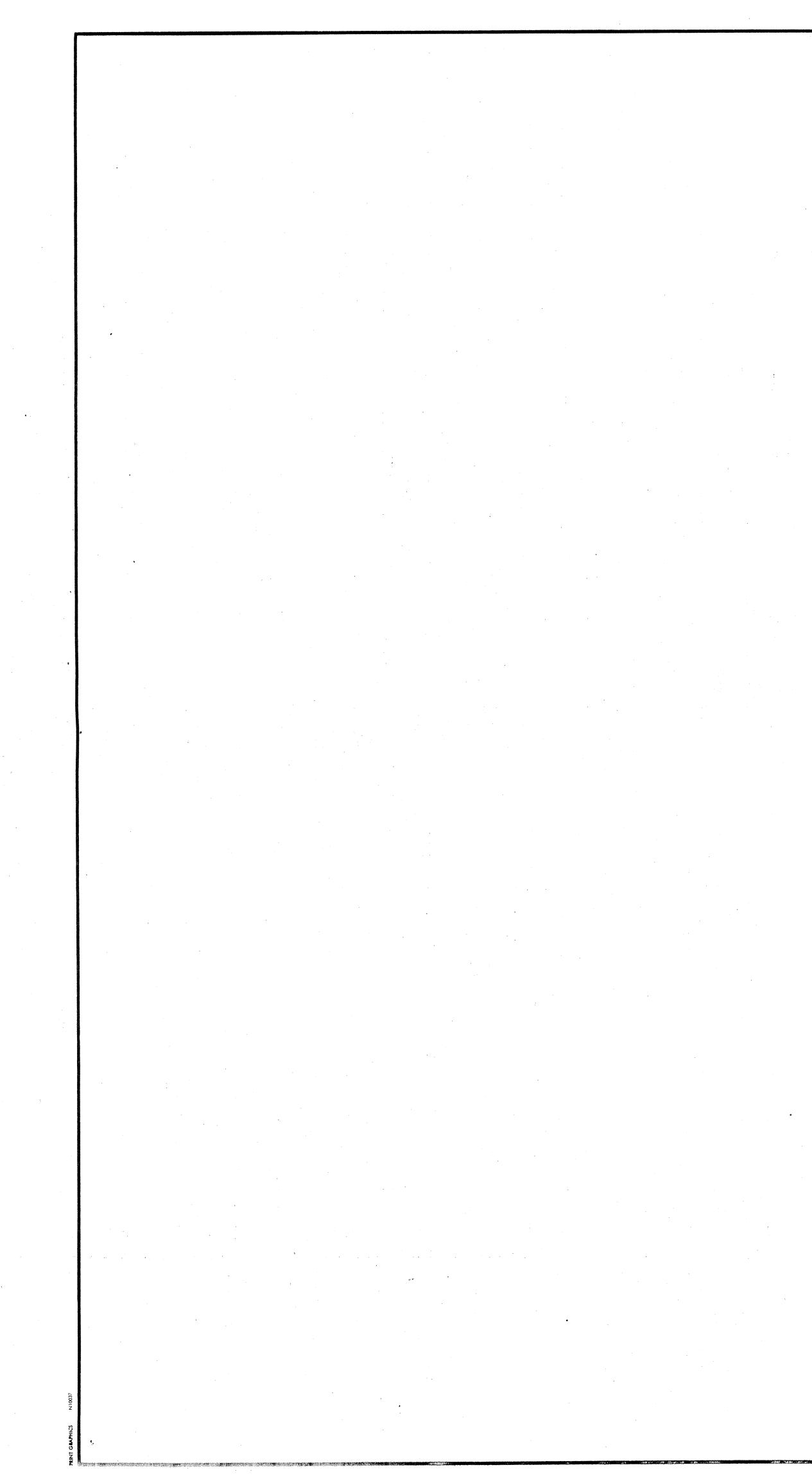
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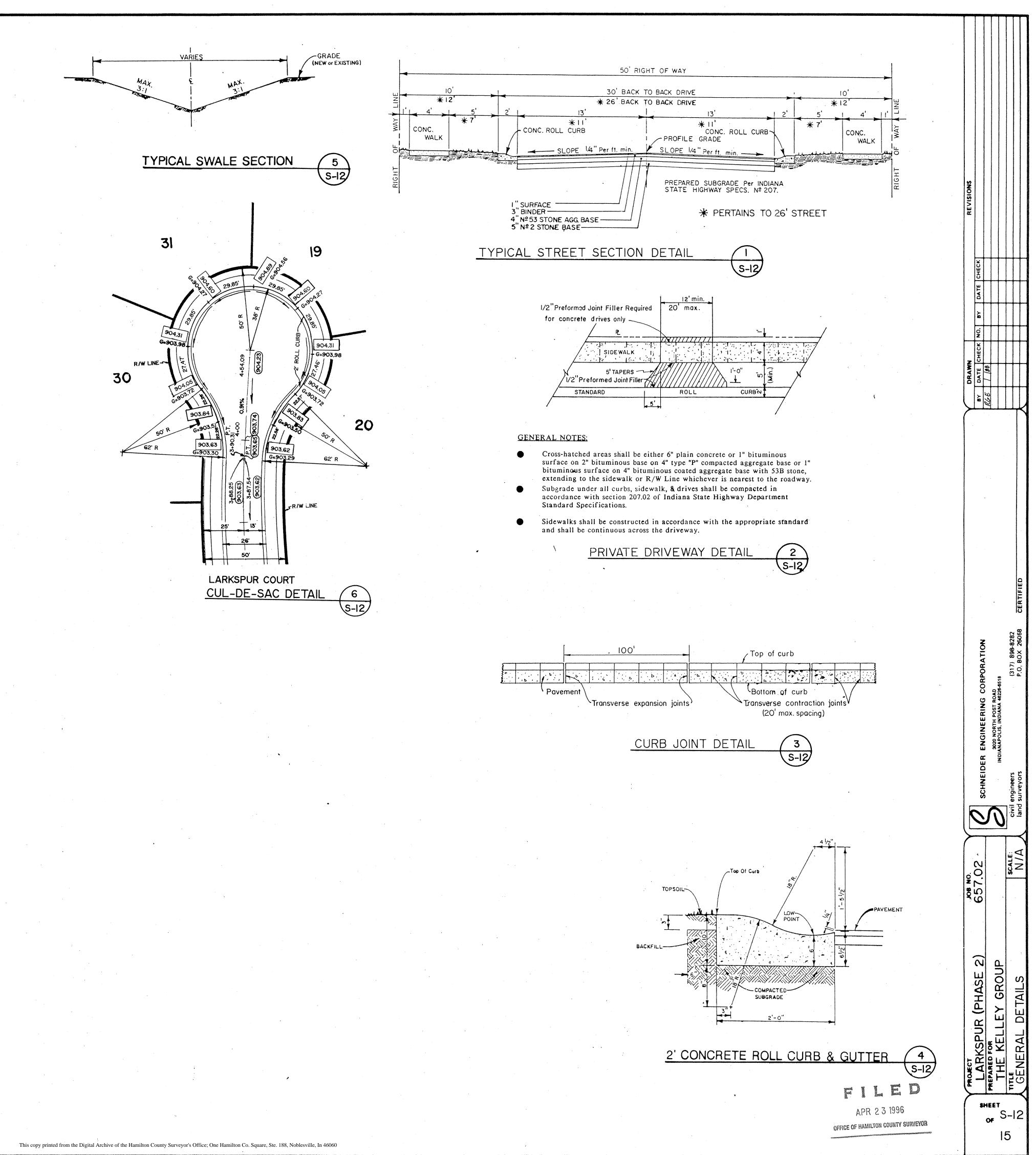


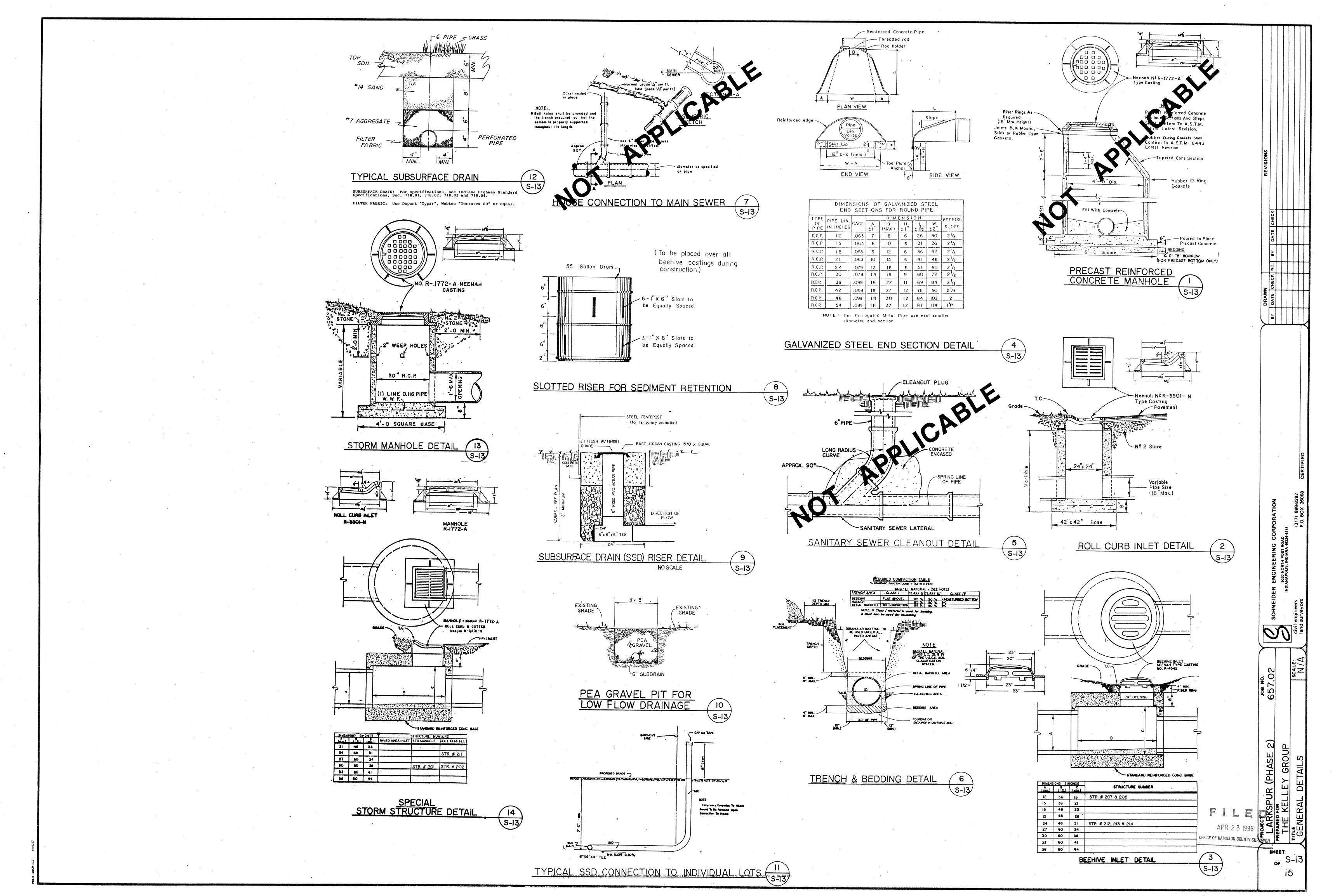












### EARTHWORK

A. Extent: The work required under this section consists of all excevating, filing; rough grading and related items necessary to complete the work indicated on the drawings and described in the specifications.

1. In general the items of work to be performed under this section shall include: clearing and grubbing, removal of trees and stumps (where required), protection of trees to remain, stripping and storage of topsoil, fill compaction and rough grading of entire site as indicated on the drawings.

Excavated material that is suitable may be used for fills. All unsuitable material and all surplus excavated material not required shall be removed from the site. The location of dump and length of haul shall be the Contractor's responsibil

Provide and place any additional fill material from off the site as may be necessary to produce the grades required. Fill obtained from off site shall be of kind and quality as specified for fills herein and the source approved by the Owner.

4. The Contractor shall accept the site as he finds it and shall remove all trash, rubbish and debris from the site prior to starting excevation.

B. Work not included: The following items of related work are specified and included in other sections of these cifications:

Excavation, grading and backfilling for utility lines 2. Storm drainage systems.

3. Sanitary sewer systems

4. Water supply systems

5. Streets and paving

SCOPE OF WORK:

Maintain carefully all bench marks, monuments and other reference points; if disturbed or destroyed, replace as directed by engineer.

REMOVAL OF TREES:

A. Remove all trees and stumps from area to be occupied by road and surfaced areas. Removal of trees outside these areas shall only be done as noted on drawings or approved by the Owne

B. All brush, stumps, wood and other refuse from the trees shall be buried onsite or burned with proper permits (where applicable).

4. PROTECTION OF TREES:

A. General Protection: The Contractor shall be onsible for the protection of tops, trunks and roots of existing trees on the project site that are to remain. Existing trees subject to construction damage shall be boxed, fenced or otherwise pretected before

any work is started; do not stockpile within branch spread. Remove interfering branches without injury to trunks and cover scars with tree paint. 5. STRIPPING OF TOPSOIL:

A. Remove topsoil to a depth of 6 inches (or more if required) from the areas to be occupied by roads, walks, buildings, and parking areas. Pile and store topsoil at a location where it will not interfere with construction operations. Top soil shall be reasonably free from subsoil, debris and stones.

6. DISPOSITION OF UTILITIES

A. Rules and regulations governing the respective utilities shall be observed in executing all work under this section.

B. It shall be the responsibility of each contractor to verify all existing utilities and conditions pertaining to his phase of the work. It shall also be the contractor's responsibility to contact the owners of the various utilities before work is started. The contractor shall notify in writing the owners of the engineers of any changes, errors or omissions found on these plans or in the field before work is started or

C. Where active utilities are encountered but not shown on the drawings; the Engineer shall be advised before work is continued.

D. Inactive and abandoned utilities encountered in excavating and grading operations shall be reported to the Engineer. They shall be removed, plugged or capped as directed by the Engineer.

7. SITE GRADING:

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A. Grades: Do all cutting, filling, compacting of fills and rough grading required to bring entire project area to subgrade as shown on the drawings

B. Rough Grading: The tolerance for paved areas shall not exceed 0.10 feet above established subgrade. All other areas shall not exceed 0.10 feet plus or minus the established grade. Provide roundings at top and bottom of banks and other breaks in grade. STORM SEWER SYSTEMS

The work under this section includes all storm sewers, storm water inlets, and related items, including excavating and backfilling, necessary to complete the work shown on the drawings.

2. MATERIALS: A: Storm Sewers:

1. SCOPE OF WORK

ASTM C-443 latest revision. B: Nanholes

1. Precast reinforced concrete manhole sections and steps shall conform to ASTN C-478 latest revision.

Castings shall be of uniform quality, free from blow holes, porosity, hard spots, shrinkage distortion or other defects. They shall be smooth and wellcleaned by shotblasting or by some other approved method. They shall be coated with asphalt paint which shall result in a smooth coating, tough and tenacious when cold, not tacky or brittle. They shall be gray iron meeting ASTM A-48 latest revision.

3. Joints - manhole sections shall be jointed with rubber type gaskets. The rubber type gaskets shall meet ASTM C-443 latest revision. C: SUBDRAINS:

. Perforated plastic pipe subdrains shall conform to ASTM. D 3034 SDR 35. 3. APPLICATION:

A: Permits and Codes: The intent of this section of the specifications is that the contractor's bid on the work covered herein shall be based upon the drawings and specifications but that the work shall comply with all applicable codes and regulations as amended by any waivers. Contractor shall furnish all bonds necessary to get permits for cuts and connections to existing

B: Local Standards: The term "Local Standards" as used herein means the standards of design and construction of the respective municipal department or utility

C: Existing Improvements: Maintain in operating condition all active utilities, severs and other drains encountered in the sever installation. Repair to the satisfaction of the owner any damage to existing active

D: Workmanship: To conform to all local, state and national codes and to be approved by all local and state agencies having jurisdiction.

E: Trenching: Lay all pipe in open trenches, except when the local authority gives written permission for tunneling. Open the trench sufficiently ahead of pipelaying to reveal any obstructions. The width of the trench shall be the inside pipe diameter plus 24 inche for 12 inches above the pipe. Sheet and brace trench as necessary to protect workmen and adjacent structures. All trenching to comply with Occupational Safety and Health Administration Standards. Keep trenches free from water while construction is in progress. Under no circumstances lay pipe or appurtenances in standing water. Conduct the discharge from trench dewatering to drains or natural drainage

F: Special Supports: Whenever, in the opinion of the Engineer, the soil at or below the pipe grade is unsuitable for supporting severs and appurtenances specified in this section, such special support, in addition to those shown or specified, shall be provided as the Engineer may direct, and the contract will be adjusted.

G: Backfilling: For a depth of a least 12 inches above the top of the pipe, backfill with earth or granular material free from large stones, rock fragments, roots or sod. Tamp this backfill thoroughly, taking care not to disturb the pipe. For the remaining trench depth, backfill with earth or granular material containing stones or rocks not larger than 4 inches. Backfill under walks, parking areas, driveways and street shall be granular material only - thoroughly compacted by oved methods. Trenches parallel to and within 10 feet of paved roadways shall be constructed the sam H: Manhole Inverts: Construct manhole flow channels of

concrete, sewer pipe or brick, smoothly finished and of semi-circular section conforming to the inside diameter of the connecting severs. Make changes in size or grade gradually and changes in direction by true curves. Provide such channels for all connecting severs at each manhole.

I: Subdrains: All subdrains onsite shall be of the size as shown and shall be placed as shown on the plans. They shall be constructed to the grades shown. All drains constructed offsite as part of the outlet drain will be located as shown.

J: Utilities: It shall be the responsibility of each contractor to verify all existing utilities and conditions pertaining to his phase of the work. It shall also be the contractors responsibility to contact the owners of the various utilities before work is started. The contractor shall notify in writing the owners or the engineer of any changes, errors or omissions found on these plans or in the field before work is started or resumed.

1. Reinforced concrete sever pipe shall conform to ASTM C-76 latest revision with joints conforming to

1. SCOPE WORK

The work required under this section includes all concrete and bituminous paving and related items necessary to complete the work indicated on drawing: and described in the specifications, including but no

'All streets, parking areas in contract limits Curbs and gutters Sidewalks and concrete slabs, exterior steps 2. MATERIALS

A. Concrete: Concrete shall be ready-mixed concrete and shall be a mix of proportioned fine and coarse aggregates with Portland cement and water. Minimum cement content shall be 6 bags per cubic yard of concrete and maximum water content shall be 5.5 U.S. gallons per sack of cament, including moisture in the aggregate. Slump for normal weight concrete shall be a maximum of 4 inches and a minimum of 2 inches. The slump of machine placed concrete shall be no less than 1-1/4 inches nor more than 3 inches. Standard test ASTM C-143 shall be used to measure slump. Compressive strength of concrete at 28 days shall be 4000 psi. All exterior concrete shall have air entrainment of 5% to 84 by volume per ASTM C-260. Retempering of delivered concrete will not be allowed. Concrete shall be composed of:

. Portland cement: Conforming to ASTM C-150, Type IA or Type IIIA.

2. Aggregates: Conforming to ASTM C-33. 3. Water: Shall be clear and free from injurious

non-extruding or resilient.

amounts of oils, acids, alkalies, organic materials or other deleterious substance

B. Welded Steel Wire Fabric: Where required for concrete reinforcement shall conform to ASTM A185. C. Premoulded Joint Filler: Shall be of non-extruding type meeting ASTN D-544, except that premoulded join filler used in concrete walk construction may be either

D. Bituminous Pavement Materials: All materials proposed for the construction of bituminous pavements shall comply with the Indiana Department of Highways Specifications, per latest revisions.

E. Compacted Aggregate Subbase: Shall be crushed stone or gravel. Crushed gravel shall be a minimum of 35% crushed material. Chert shall be limited to a maximum of 8% of the total. Material shall be free from an excess of flat, elongated, thinly laminated, soft or disintegrated pieces; and shall be free from fragments coated with dirt. Compacted aggregate shall be graded as follows:

SIEVE SIZE	* PASSING
1-1/2"	100
1*	80-100
3/4"	70-90
1/2"	55-80
#4	35-60
#8	25-50
#30	12-30
#200	5-10

A. Grading: Do any necessary grading in addition to that performed in accordance with Earthwork Section, to bring subgrades, after final compaction, to the required grades and sections for site improvement

B. Preparation of Subgrade: Remove spongy and otherwise unsuitable Exterial and replace with stable material. No traffic will be allowed on prepared subgrade prior to paving.

C. Compaction of Subgrade: The first 6 inches below the subgrade shall be compacted to at least 100% of the maximum dry density as determined by the provisions of AASHO T-99. Water shall be prevented from standing on the comparised subgrade.

D. Utility Structures: Check for correct elevation of all manhole covers, valve boxes and similar structure ocated within areas to be paved, and make, or have made, any nacessary adjustments in such structures.

E. Placing Concrete:

3. APPLICATION

Subgrade: Place concrete only on a moist, compacted subgrade or base free from loose material Place no concrete on a muddy or frozen subgrade.

2. Forms: All forms shall be free from warp, tight enough to prevent leakage and substantial enough to maintain their shape and position without springing or settling, when concrete is placed. Forms shall be clean and smooth immediately before concreting

3. Placing Concrete: Concrete shall be deposited so as to require as little rehandling as practicable. When concrete is to be placed at an atmospheric temperature of 35 degrees F. or less, paragraph 702.10 of the Indiana Department of Highways Specifications, latest revision shall be followed.

F. Concrete Curb and Gutter: 1. Expansion Joints: Shall be 1/2 inch thick premoulded at ends of all returns and at a maximum spacing of 100 feet

2. Contraction Joints: Unless otherwise provided, contraction joints shall be saved joints spaced 20 feet on center.

3. Finish: Tamp and screed concrete as soon as placed, and fill any honey combed places. Finish square corners to 1/4" radius and other corners to radii shown.

G. Concrete Walks and Exterior Steps: 1. Slopes: Provide 1/4 inch per foot cross slope. Make adjustments in slopes at walk intersections as necessary to provide proper drainage.

2. Dimensions: Walks and steps shall be one course construction and of widths and details shown on the drawings.

- 3. Finish: Screed concrete and trowel with a steel trowel to a hard dense surface after surface water has disappeared. Apply medium broom finish and scribe control joints at 5 foot spacing. Provide 1/2" expansion joints where sidewalks intersect, and at a maximum spacing of 48 feet between expansion joints.
- H. Curing Concrete: Except as otherwise specified, cure all concrete by one of the methods described in Section 501.17 of the Indiana Department of Highways ecifications, latest revisions.
- I. Bituminous Pavement: Hot asphalt concrete pavement shall be a specified in Section 403 of the Indiana Department of Highways Specifications. latest revisions. Paving will not be permitted during unfavorable weather or when the temperature is 40 degrees F. and falling.
- J. Compacted Aggregate Subbase: The thickness shown on the drawings is the minimum thickness of the fully compacted subbase. Compaction shall be accomplished by rolling with a smooth wheeled roller weighing 8 to 10 tons. Compact to 90% compaction using Standard Testing Procedures. Along curbs, headers and walls and at all placed not accessible to the roller, the aggregate material shall be tamped with mechanical tampers of with approved hand tampers.

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WAT

A. The work required unde water distribution lin and related items inc necessary to complete The ends of water serv plugged or capped at t connecting to all such specified in the plumb architectural drawing

MATERIALS:

2.

1. SCOPE OF WORK:

A. Cast Iron Pipe: Cast Specification C-106 wi Specification C-111. determined from Table pipe shall meet AWWA ( Pipe to be cement line

B. Copper Tubing: Shall b tubing complying with F Fittings shall be wroug solder joints. Solder recommended by the manu

C. Fire Hydrants: Shall 502 and shall meet lo particularly as to no: direction of opening a cap nuts. Fire Hydran hose nozzles. A valve and a 6 inch inlet co hydrant barrel shall h depth of cover over th

D. Valves: All valves an adapters shall be prov in the lines in which meet local standards standards, the follow

> 1. Valves in cast i bronze mounted, disc g Specification C-500. direction as those us Valve stems shall term Furnish two (2) keys.

2. Valves in copper body, round-way, groun Furnish two (2) keys. E. Valve Boxes: Shall me absence of such, shall requirements:

1. For iron body val standard buffalo-type boxes, having a minimu

2. For brass body va approved standard cas having a minimum diame lid held in place by a Castings shall be coat pitch varnish. Furnis

F. Plastic Pipe: Shall of flexible elastomeric 3139. NSF SEAL OF AP PLASTIC PIPE. G. Stops: Stop shall be Mueller Corporation wi

copper compression ty H. Blow-off Valves: Blow

manufactured by Muell 10291), or equal. I. Angle Valves: Angle v

stub are to be copper and are to be protecte valve. J. Taps: 3/4" taps in li

be only by tapped tee lines should be marked (Sewer lateral locatio 3. APPLICATION:

A. Permits and Codes: Th specifications is that covered herein shall h specifications but th applicable codes and 1 furnish all necessary

B. Existing Improvements: all active utilities that may be encountered

C. Trenching: Lay all pi local authority gives Provide a separate tre 10 feet horizontally f locations where separa lines are impracticab shelf at least 18 inch

D. Width of Trench: Exca of the pipe for proper E. Sheeting and bracing:

necessary to protect All trenching shall co and Health Administrat

F. Water Removal: Keep t construction therein circumstances lay pipe water. Conduct the di drains or natural dra

G. Grading Trench Bottoms pipe shall be fully an load shall rest on the may be excavated to a final grade with sand, to bring it back to p at least 12 inches abo with earth or granular roots or frozen clogs taking care not to di walks, parking areas d granular material only methods. Trenches pa paved roadways shall

H. Test: Before joints a water, opening hydrant Test the piping for le two hours at a pressu Inspect all joints for Upon completion of th out the system until t the system has been fl in accordance with the

I. Shop Drawings: Submit valves to the

Company.

J. If a horizontal distan maintained between the sewer line, the sewer works grade ductile in within 10' of the wate

K. Utilities: It shall be contractor to verify a conditions pertaining shall also be the con the owners of the vari started. The contract owners or the engineer omissions found on th work is started or re

L. New Water Main Constru dimension of each wate fire hydrant measured of hydrants and water construction changes original construction prints submitted to th after completion of co

TER MAINS		
Her this section includes all cold ines, valves, meter pits, hydrants, cluding excavating and backfilling a the work shown on the drawings. rvice lines shall be tightly the terminal points pending the ch lines of the building piping as bing specifications and s.		
iron pipe shall meet AWWA with push-on jeints meeting AWWA Walk thickness shall be 6.4 in AWWA C-106. Ductile iron C-150 and C-151 Specifications. Hes per AWWA C-104.		
be seamless, annealed copper A Federal Specification WW-T-799. Sught copper or cast bronze with an shall be of a composition- anufacturer of the fittings.		<b>Y</b>
t comply with AWWA Specification C- ocal standards and requirements, ozzle diameters and threads, and dimensions of operating and ints shall have one pumper and two re opening not less than 5 inches onnection. The length of the be determined by the specified the pipe.		CHECK
and stops shall have ends suited or wided for the proper installation they are located. Valves shall or in the absence of such wing requirements:		BY DATE
ron pipe shall be iron body, gate valves conforming to AWWA They shall open in the same ed in the local waterworks system. mainate in 2 inch wrench nuts.		CHECK
r pipe shall be standard brass and-key stops, with T heads. meet local standards or in the		DRAWN DATE C
l comply with the following lives, boxes shall be approved a, cast iron, adjustable shaft		AB W
Aum shaft diameter of 5-1/4 inches. Valves (stops) boxes shall be st iron extension service boxes, meter of 2-1/2 inches and having a brass or bronze bolt. The sted with two coats of coal-tar ish two (2) keys for bolt in lids.		
conform to ASTM D-2241-SDR 21 with seal joints conforming to ASTM D- PROVAL SHALL BE STAMPED ON ALL		
those manufactured by Ford or with AWWA taper thread, and with the fitting on outlet, or equal. w-off valves shall be those er Corporation (H-10283 or H-		
valves at the end of water service compression type fitting also, ed with plastic bag over the		
ines smaller than 4 inches shall or tapping saddle. Water service d on curbs with blue paint. .ons - red).		Ē
The intent of this section of the t the contractor's bid on the work be based upon the drawings and the work shall comply with all regulations. Contractor shall y bonds to get permits for cuts, and		CERTIF
: Maintain in operating condition and sewers and other pipe system red.		ATION 1 898-8282 BOX 26068
bipe in open trenches, except when s written permission for tunneling. ench for the water line at least from any sanitary sever. In rate trenches for sever and water ble, lay the water pipe on a solid thes above the top of the sever. ravate trenches 12 inches each side		0RPOF (31) P.O.
or installation of pipe. Sheet and brace trenches as workmen and adjacent structures. comply with the Occupational Safety ition Standards.		R ENGINEERING C
trenches free from water while is in progress. Under no be or appurtenances in standing lischarge from trench dewatering to tinage channels.		INDI INDI
as: The bottom quadrant of the and uniformly supported. The full be barrel of the pipe. The trench a depth of 4 inches or more below d, crushed stone or gravel backfill bipe laying grade. For a depth of bove the top of the pipe backfill ar material free from large stones, s. Tamp this backfill thoroughly sturb the pipe. Backfill under driveways and streets with		SCHNEI civil engineers land surveyors
y and tamp thoroughly, by approved rallel to and within 10 feet of be constructed the same. are covered, fill the piping with its or other outlets to expel air. eakage for a period of at least are of 100 pounds per square inch. or leakage and remedy any leaks. He water distribution mains, flush		N/A N/A
the water runs clear. As soon as flushed out, it shall be sterilized he requirements of the Water it Shop Drawings of hydrants and Water Company for approval. water of 10 feet cannot be		657 657
e water line and the sanitary must be constructed of water ron pipe with mechanical joints er line. be the responsibility of each		
all existing utilities and to his phase of the work. It tractors responsibility to contact ious utilities before work is tor shall notify in writing the er of any changes, errors or lese plans or in the field before sumed.		R (PHASE 2 EY GROUP ATIONS
uction: Contractor to record er stub and valves from nearest along water main. The locations valves, along with any other are to be incorporated on the drawings and "Record Drawing" the Water Company as soon construction as possible.		ELL SPU
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