



Memorandum

DATE: May 11, 2022

TO: Kelso School District, CSG

FROM: Elissa Peters, PE

PROJECT: Kelso High School Practice Fields (PBS Project 71853.000)

REGARDING: **Bid Addendum #1**

The additions, clarifications and corrections herein shall be made to the Drawings and Schedule for the above-referenced project and shall be included in the scope of work and proposals to be submitted.

NOTE: References made below to the Drawings shall be used as a general guide only. The Bidders shall determine the work affected by the Addendum items.

CIVIL

- Added project soils report

LANDSCAPE ARCHITECTURE

- Revised controller location for exterior application near the fields
- Added clarity of the connection to the existing pump house and overall system
- Added notes on salvaging existing irrigation components

Attachment(s): Updated landscape and irrigation plan sheets
Project soil report

End of Addendum #1

1. Sprinkler Control Location
make 2 model - Include in ~~advertisement~~ ^{advertisement}.
2. Impact of play field soil.
3. Reference to Geotech document -
need posted.
4. Required soil test.
5. bases & fixtures -
products could be grow out -
6. Anchored base may could be more readily
available.
7. Option is anchored base -
8. Some survey but final contractor
Require survey -
9. Salvage some components (valves)

**Kelso School District #458
High School Practice Field Improvements**

Bid Proposal FORM

May 17th, 2022, at 3:00 p.m.

Project No. 2022 High School Practice Fields Improvements
for
(Sealed Base Bid Due 3:00 P.M. Tuesday May 17th)

To: Kelso School District #458
The Kelso School District Business Office
601 Crawford Street
Kelso, WA 98626
ATTN: Scott Westlund

Submitted BY (BIDDER TO ENTER NAME AND ADDRESS):

A. BIDDER'S NAME: _____

B. ADDRESS: _____

C. CITY, STATE, ZIP: _____

OFFER:

Having carefully examined the Project Manual (specifications) and the Drawings entitled Kelso High School Practice Field Improvements, as well as the premises and conditions affecting the Work, the undersigned represents that it has the personnel, qualifications, expertise and means to complete the Work in a timely manner and proposes to furnish all labor, equipment, and materials to perform the Base Bid Work and awarded Bid Alternates required in strict accordance with the proposed Contract Documents for the following amount:

Amount shall be shown in both words and figures. In case of discrepancy, the amount shown in figures shall govern.

TOTAL BASE BID:

DOLLARS (\$ _____)

UNIT PRICES:

The base Bid **includes** amounts calculated on multiplying both of the following unit prices by the estimated quantities set forth in the Contract Documents.

Unit Price No.1 (additional seeding) \$_____ per acre

Unit Price No. 2 (additional excavation) \$_____ per cubic yard

OVERHEAD AND PROFIT:

All of the above bid prices include overhead and profit.

SALES TAX:

None of the above bid prices include State, County, or City Sales Tax.

ALTERNATES BIDS:

The undersigned proposes to perform the Alternate Bid Work called for in the Bid Documents for the following additions to the Base Bid, which include all costs associated with the Alternate, Including overhead and profit.:

ADDITIVE/DEDUCTIVE ALTERNATES**Add/Deduct**

No bid alternates

OVERHEAD AND PROFIT:

All of the above bid alternates include overhead and profit.

SALES TAX:

None of the above bid prices include State, County, or City Sales Tax.

REINSTATEMENT OF ALTERNATE BIDS:

The undersigned agrees that the owner has the right to reinstate, at the bid price any or all of the Alternate Bids not originally incorporated into the Contract, provided the Owner so notifies the undersigned within forty-five (45) calendar days after the date of the Contract execution, or such longer period identified in the Bidding Documents.

CONTRACT, BOND, INSURANCE CERTIFICATES:

If the undersigned is notified of the acceptance of this Bid within forty-five (45) calendar days after the time set for opening of bids (the "Bid Date"), or such longer period identified in the Bidding Documents, it agrees to execute and deliver to the Owner the Agreement Between Owner and Contractor in the form provided by the Owner for a compensation computed from the above sum and any Alternates selected by the Owner and to furnish the bond, insurance certificates and other documents as required by the Contract Documents within ten (10) days after issuance of the Letter of Intent to Award a Contract.

LIQUIDATED DAMAGES:

The Bidder, by submitting its Bid, represents that the liquidated damages specified in the Contract Documents are a reasonable estimate of the costs and damages to the Owner that would be incurred if the Contractor fails to achieve Substantial Completion within the Contract Time.

BID SECURITY:

5% of the Base Bid

The undersigned further agrees that the Bid security accompanying this Bid shall be left in escrow with the Owner. The Bid security constitutes a pledge that the Bidder will, if issued a Letter of Intent to Award, enter into the Contract with the Owner on the form provided and on the terms stated in its Bid and will furnish the payment and performance bonds, certificates of insurance, and all other documents required in the Contract Documents. Should the Bidder fail or refuse to enter into the Contract or fail or refuse to furnish such documents, the amount of the Bid security shall be forfeited to the Owner as liquidated damages, and not as a penalty.

ADDENDA:

Receipt of the following addenda is hereby acknowledged and all costs of the Work therefore have been included in the proposal.

Addendum No.1 Dated 5/12/22

AS A CONDITION OF SUBMITTAL OF THIS BID, THE CONTRACTOR CERTIFIES THAT:

- A. It will comply with the current Cowlitz County prevailing wages pursuant to RCW 39.12. See Washington State Prevailing Wage Rates and Benefit Code Key.
- B. It is a registered contractor with RCW 18.27.
- C. It will comply with RCW 70.92, Aged and Physically Handicapped.
- D. It will comply with RCW 26A.400.330, Crimes Against Children.
- E. It has a current state unified business identifier number.
- F. It has industrial insurance coverage for the its employees working in Washington as required in Title 51 RCW
- G. It has an employment security department number as required in Title 50 RCW.
- H. It has a state excise tax registration number as required in Title 82 RCW
- I. It is not disqualified from bidding on any public works contract under RCW 39.06.010 (unregistered or unlicensed contractors) or RCW 39.12.065(3) (prevailing wage violations).
- J. Within the three-year period immediately preceding the **Bid** Date, the Bidder has not been determined by a final and binding citation and notice of assessment issued by the Department of Labor and Industries or through a civil judgment entered by a court of limited or general jurisdiction to have willfully violated, as defined in RCW 49.48.082, any provisions of chapter 49.46, 49.48 or 49.52 RCW.

The undersigned certifies under penalty of perjury under the laws of the State of Washington that the foregoing representations are true and correct.

This bid may be withdrawn at any time prior to the scheduled time for the opening of bids, or any authorized postponement thereof. The District reserves the right to reject any and all bids.

THE UNDERSIGNED CERTIFIES THAT THEY ARE AUTHORIZED TO BIND THE LEGAL ENTITY MAKING THIS PROPOSAL.

In compliance with WAC 296-127, the Contractor shall pay all fees with each Statement of Intent and/or Affidavit of Wages Paid to the Department of Labor & Industries and these fees shall be considered as part of or included in the base bid.

Firm Name _____

Signed by _____

Official Capacity _____

Address _____

City / State _____

Date _____ Telephone _____ Fax _____

E-mail Address _____

State of Washington Contractor's License Number _____

Federal Tax Identification Number _____

Uniform Business Identifier (UBI) Number _____

Note: If bidder is a Corporation, indicate below and write "State of Incorporation" if a Partnership, indicate below and give full names and addresses of all partners.

A. (If Corporation) – State of Incorporation: _____

B. (If Partnership)- List all Partners:

1. Name: _____

a. Address: _____

2. Name: _____

b. Address: _____

3. Name: _____

c. Address: _____



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Cowlitz County, Washington**



February 1, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

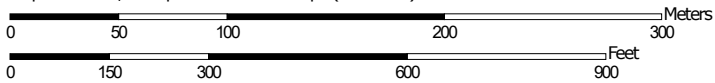
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Map Scale: 1:3,480 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cowlitz County, Washington
Survey Area Data: Version 22, Aug 23, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 21, 2021—Nov 22, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
5	Arents, 0 to 5 percent slopes	0.0	0.0%
17	Caples silty clay loam, 0 to 3 percent slopes	6.0	10.1%
32	Clato silt loam, 0 to 3 percent slopes	27.5	46.3%
65	Godfrey silt loam, 0 to 3 percent slopes	25.7	43.3%
181	Sara silt loam, 15 to 40 percent slopes	0.2	0.3%
Totals for Area of Interest		59.4	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Cowlitz County, Washington

5—Arents, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2fg8
Elevation: 20 to 2,000 feet
Mean annual precipitation: 40 to 80 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 90 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Arents and similar soils: 95 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arents

Setting

Landform: Flood plains, mountains, hills
Parent material: Mixed disturbed material

Typical profile

H1 - 0 to 10 inches: very gravelly sandy loam
H2 - 10 to 60 inches: extremely gravelly sandy loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 5.95 in/hr)
Depth to water table: About 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: B
Hydric soil rating: No

17—Caples silty clay loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2f4w
Elevation: 0 to 50 feet
Mean annual precipitation: 38 to 50 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 165 to 195 days

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Farmland classification: Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Caples, drained, and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Caples, Drained

Setting

Landform: Flood plains

Parent material: Alluvium

Typical profile

H1 - 0 to 9 inches: silty clay loam

H2 - 9 to 39 inches: silty clay loam

H3 - 39 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 18 to 24 inches

Frequency of flooding: NoneRare

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 11.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: C/D

Ecological site: F002XB007WA - Portland Basin Wet Forest

Forage suitability group: Seasonally Wet Soils (G002XV202WA)

Other vegetative classification: Seasonally Wet Soils (G002XV202WA)

Hydric soil rating: Yes

Minor Components

Caples, poorly drained

Percent of map unit: 10 percent

Landform: Flood plains

Hydric soil rating: Yes

32—Clato silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2fch

Elevation: 30 to 300 feet

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Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 50 to 52 degrees F
Frost-free period: 160 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Clato and similar soils: 85 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Clato

Setting

Landform: Flood plains
Parent material: Alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 80 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: NoneRare
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
Ecological site: F002XB004WA - Portland Basin Forest
Forage suitability group: Soils with Few Limitations (G002XV502WA)
Other vegetative classification: Soils with Few Limitations (G002XV502WA)
Hydric soil rating: No

Minor Components

Newberg

Percent of map unit: 5 percent
Landform: Alluvial cones
Hydric soil rating: No

65—Godfrey silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2flz

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Elevation: 20 to 300 feet
Mean annual precipitation: 40 to 65 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Godfrey and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Godfrey

Setting

Landform: Flood plains
Parent material: Alluvium

Typical profile

H1 - 0 to 5 inches: silt loam
H2 - 5 to 27 inches: silty clay loam
H3 - 27 to 60 inches: sandy clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 59 inches to abrupt textural change
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 to 24 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: F002XA008WA - Puget Lowlands Riparian Forest
Forage suitability group: Seasonally Wet Soils (G002XV202WA)
Other vegetative classification: Seasonally Wet Soils (G002XV202WA)
Hydric soil rating: Yes

Minor Components

Godfrey, drained

Percent of map unit: 10 percent
Hydric soil rating: Yes

Caples

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

181—Sara silt loam, 15 to 40 percent slopes

Map Unit Setting

National map unit symbol: 2f5f

Elevation: 250 to 450 feet

Mean annual precipitation: 40 to 50 inches

Mean annual air temperature: 48 to 52 degrees F

Frost-free period: 160 to 185 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Sara and similar soils: 80 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sara

Setting

Landform: Terraces, escarpments

Parent material: Alluvium

Typical profile

H1 - 0 to 11 inches: silt loam

H2 - 11 to 35 inches: silty clay loam

H3 - 35 to 60 inches: silty clay

Properties and qualities

Slope: 15 to 40 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: About 12 to 24 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C/D

Ecological site: F002XA004WA - Puget Lowlands Forest

Forage suitability group: Sloping to Steep Soils (G002XF703WA)

Other vegetative classification: Sloping to Steep Soils (G002XF703WA)

Hydric soil rating: No

Minor Components

Prather

Percent of map unit: 10 percent

Custom Soil Resource Report

Hydric soil rating: No

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Custom Soil Resource Report

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IRRIGATION SCHEDULE KELSO HIGH SCHOOL PRACTICE FIELD UPDATES

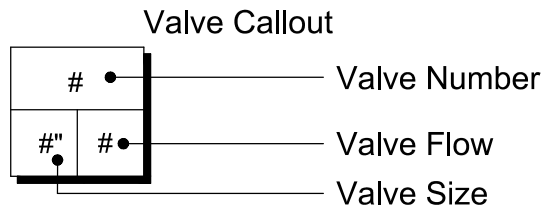
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	PSI	GPM	RADIUS	DETAIL
04	Rain Bird 8005-NP Turf Rotor, 5" Pop-Up, Plastic Riser, Standard Nozzle. With Seal-A-Matic Check Valve, Adjustable 50-330 arc, and 360 Non-Reversing Full-Circle. 1" (26/34) NPT. Extended Radius is Ideal for Large Turf Applications. Non-Potable Purple Cap.	31	60	3.80	35'	IRR06
	Rain Bird 8005 Series Sod Cups	31				
06	Rain Bird 8005-NP Turf Rotor, 5" Pop-Up, Plastic Riser, Standard Nozzle. With Seal-A-Matic Check Valve, Adjustable 50-330 arc, and 360 Non-Reversing Full-Circle. 1" (26/34) NPT. Extended Radius is Ideal for Large Turf Applications. Non-Potable Purple Cap.	10	60	6.10	40'	IRR06
	Rain Bird 8005 Series Sod Cups	10				
08	Rain Bird 8005-NP Turf Rotor, 5" Pop-Up, Plastic Riser, Standard Nozzle. With Seal-A-Matic Check Valve, Adjustable 50-330 arc, and 360 Non-Reversing Full-Circle. 1" (26/34) NPT. Extended Radius is Ideal for Large Turf Applications. Non-Potable Purple Cap.	8	60	8.40	44'	IRR06
	Rain Bird 8005 Series Sod Cups	8				
10	Rain Bird 8005-NP Turf Rotor, 5" Pop-Up, Plastic Riser, Standard Nozzle. With Seal-A-Matic Check Valve, Adjustable 50-330 arc, and 360 Non-Reversing Full-Circle. 1" (26/34) NPT. Extended Radius is Ideal for Large Turf Applications. Non-Potable Purple Cap.	1	60	10.1	47'	IRR06
	Rain Bird 8005 Series Sod Cups	1				
12	Rain Bird 8005-NP Turf Rotor, 5" Pop-Up, Plastic Riser, Standard Nozzle. With Seal-A-Matic Check Valve, Adjustable 50-330 arc, and 360 Non-Reversing Full-Circle. 1" (26/34) NPT. Extended Radius is Ideal for Large Turf Applications. Non-Potable Purple Cap.	85	60	12.0	53'	IRR06
	Rain Bird 8005 Series Sod Cups	85				
16	Rain Bird 8005-NP Turf Rotor, 5" Pop-Up, Plastic Riser, Standard Nozzle. With Seal-A-Matic Check Valve, Adjustable 50-330 arc, and 360 Non-Reversing Full-Circle. 1" (26/34) NPT. Extended Radius is Ideal for Large Turf Applications. Non-Potable Purple Cap.	13	60	15.9	58'	IRR06
	Rain Bird 8005 Series Sod Cups	13				
18	Rain Bird 8005-NP Turf Rotor, 5" Pop-Up, Plastic Riser, Standard Nozzle. With Seal-A-Matic Check Valve, Adjustable 50-330 arc, and 360 Non-Reversing Full-Circle. 1" (26/34) NPT. Extended Radius is Ideal for Large Turf Applications. Non-Potable Purple Cap.	5	60	17.8	58'	IRR06
	Rain Bird 8005 Series Sod Cups	5				

IRRIGATION NOTES:

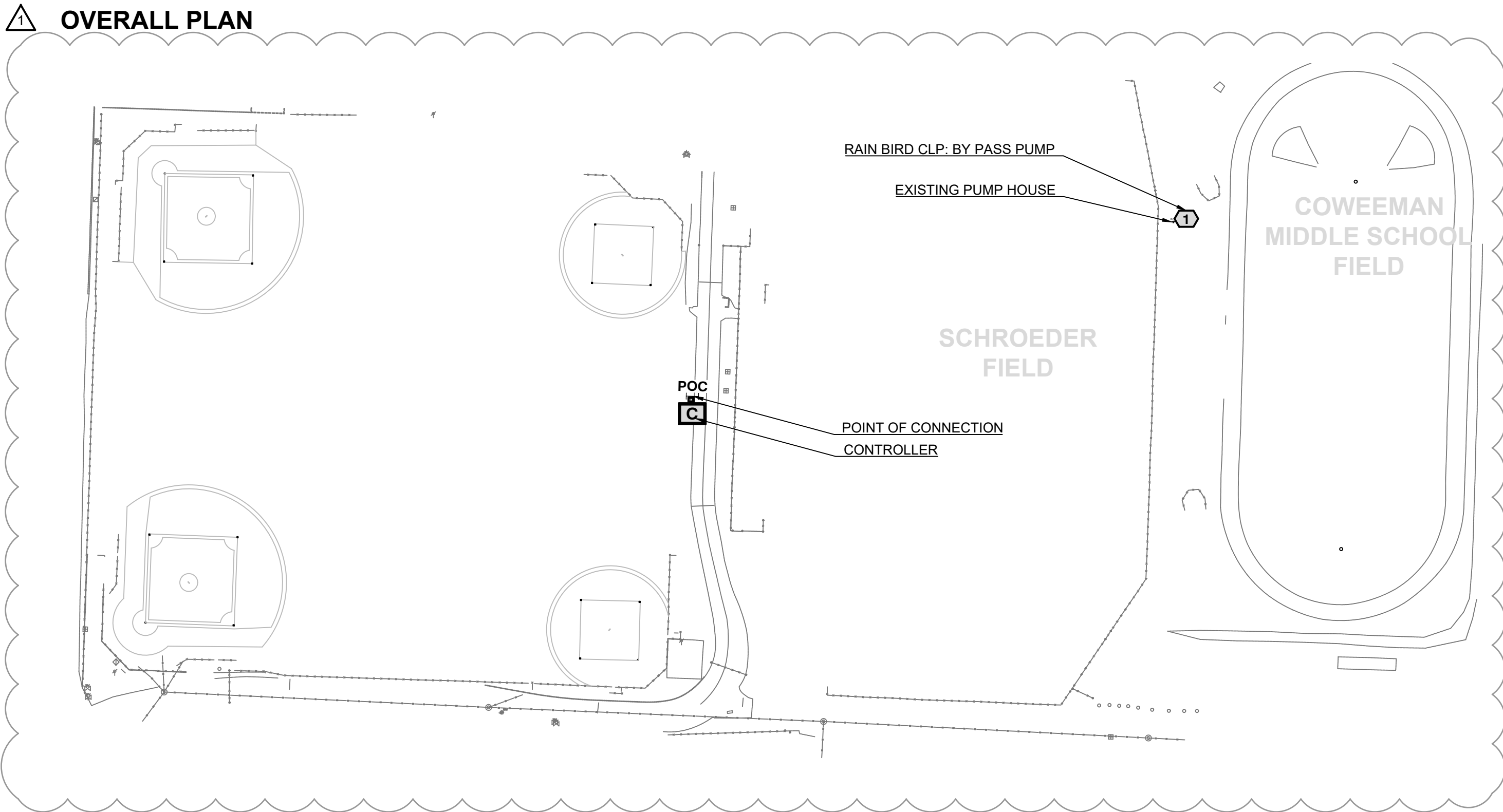
- LOCATE AND VERIFY ALL UTILITY LINES PRIOR TO EXCAVATION OR CONSTRUCTION. CONTRACTOR SHALL TAKE SOLE RESPONSIBILITY FOR ALL DAMAGES CAUSED AS A RESULT OF THEIR WORK.
- COORDINATE IRRIGATION POINTS OF CONNECTION, LOCATION OF AUTOMATIC CONTROL VALVES AND OVERALL IRRIGATION SYSTEM WITH SITE IMPROVEMENTS. CONTRACTOR SHALL NOT PROCEED WITH INSTALLATION WHEN OBSTRUCTIONS OR DISCREPANCIES EXIST THAT MAY NOT HAVE BEEN KNOWN DURING DESIGN. SUCH CONDITIONS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER'S AUTHORIZED REPRESENTATIVE. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ALL NECESSARY REVISIONS DUE TO FAILURE TO GIVE SUCH NOTIFICATIONS.
- FIELD VERIFY EXISTING WATER PRESSURE PRIOR TO INSTALLATION. SYSTEM IS DESIGNED TO OPERATE AT 60 TO 70 PSI AT P.O.C..
- PIPE LOCATIONS, VALVES AND OTHER COMPONENTS ARE SHOWN DIAGRAMMATICALLY FOR CLARITY. PIPING ARE TO SHARE COMMON TRENCH WHEREVER POSSIBLE. ANY REROUTING OR CHANGES TO PIPE LOCATIONS SHALL BE AT THE APPROVAL OF THE LANDSCAPE ARCHITECT.
- PIPE SIZES SHALL NOT BE DECREASED. LARGER SIZED PIPE CAN BE USED AT NO ADDITIONAL COST TO OWNER.
- IRRIGATION SLEEVES ARE SHOWN AT APPROXIMATE LOCATIONS. ALL PIPING AND CONTROL WIRING PROPOSED UNDER PAVEMENT SHALL BE INSTALLED IN 4" SCH80 PVC SLEEVE UNLESS OTHERWISE NOTED. INSTALL SLEEVES PRIOR TO PLACEMENT OF PAVEMENT WHENEVER POSSIBLE. BORING SHALL AT BE NO COST TO OWNER UNLESS OTHERWISE SPECIFIED.
- CONTROLLER TO BE LOCATED AS SHOWN ON PLANS OR AS VERIFIED IN FIELD BY OWNER'S REPRESENTATIVE. COORDINATE POWER CONNECTIONS FOR CONTROLLER LOCATIONS.
- CONTRACTOR SHALL STAKE ALL IRRIGATION ROTOR HEADS PRIOR TO INSTALLATION FOR APPROVAL OF OWNER'S REPRESENTATIVE. ADJUST HEAD LOCATIONS BASED ON FIELD CONDITIONS AND RECOMMENDATIONS BY OWNER'S REPRESENTATIVE.
- THE SUMMARY OF QUANTITIES FOR THE IRRIGATION SYSTEM COMPONENTS AS LISTED IS FOR THE CONVENIENCE TO THE CONTRACTOR IN DETERMINING THE EXTENT OF THE WORK. ACTUAL QUANTITIES MAY VARY AND DOES NOT INCLUDE NECESSARY FITTINGS, MINOR REROUTING AND OTHER DEVIATIONS. CONTRACTOR TO PROVIDE ALL IRRIGATION EQUIPMENT, PIPE, FITTINGS AND ACCESSORIES NECESSARY TO COMPLETE THE IRRIGATION SYSTEM AS SPECIFIED.

- CONTRACTOR SHALL SALVAGE EXISTING COMPONENTS IN GOOD WORKING CONDITION AND DELIVER TO KELSO SCHOOL DISTRICT

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	DETAIL
	Rain Bird ESP12LXMEF w/ (2) ESPLXMSM12. Installed within Rainbird LXMM Metal Enclosure on pedestal. Powder Coated Dark Green to match existing utility. Submit color sample for approval	1	IRR06
	Rain Bird CLP: BYPASS PUMP	1	N/A
	Rain Bird PEB-NP-HAN-PRS-D 2" 1", 1-1/2", 2" Plastic Industrial Valves. Low Flow Operating Capability, Globe Configuration. With Purple Handle for Non-Potable Water Use.	21	IRR06
	3" Existing Connection	1	IRR06
	Rain Bird 33-DLRC 3/4" 3/4" Brass Quick-Coupling Valve, with Corrosion-Resistant Stainless Steel Spring, Locking Thermoplastic Rubber Cover, Double Track Key Lug, and 2-Piece Body.	5	IRR06
	Ball Valve, 2" PVC Schedule 80	5	IRR06
	Irrigation Lateral Line: PVC Schedule 40-NP 1" Size are labeled on the plans.	2,100 LF	IRR06
	Irrigation Lateral Line: PVC Schedule 40-NP 1 1/2" Size are labeled on the plans.	2,150 LF	IRR06
	Irrigation Lateral Line: PVC Schedule 40-NP 2" Size are labeled on the plans.	1,850 LF	IRR06
	Irrigation Lateral Line: PVC Schedule 40-NP 2 1/2" Size are labeled on the plans.	600 LF	IRR06
	Irrigation Lateral Line: PVC Schedule 40-NP 3" Size are labeled on the plans.	880 LF	IRR06
	Irrigation Mainline: PVC Schedule 40-NP 2 1/2" Size are labeled on the plans.	40 LF	IRR06
	Irrigation Mainline: PVC Schedule 40-NP 3" Size are labeled on the plans.	2,680 LF	IRR06



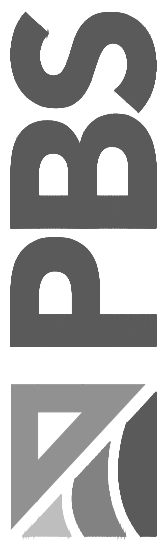
VALVE SCHEDULE							
NUMBER	MODEL	SIZE	TYPE	GPM	HEADS	PSI	PRECIP
10	Rain Bird PEB-NP-HAN	2"	Turf Rotor	96.00	8	69.89	0.55 in/h
11	Rain Bird PEB-NP-HAN	2"	Turf Rotor	90.10	7	69.17	1.35 in/h
12	Rain Bird PEB-NP-HAN	2"	Turf Rotor	68.10	5	67.31	4.24 in/h
13	Rain Bird PEB-NP-HAN	2"	Turf Rotor	96.00	8	69.34	0.46 in/h
14	Rain Bird PEB-NP-HAN	2"	Turf Rotor	60.00	5	69.34	1.29 in/h
15	Rain Bird PEB-NP-HAN	2"	Turf Rotor	44.40	4	66.98	0.51 in/h
16	Rain Bird PEB-NP-HAN	2"	Turf Rotor	70.20	5	66.54	2.28 in/h
17	Rain Bird PEB-NP-HAN	2"	Turf Rotor	96.00	8	69.9	0.47 in/h
18	Rain Bird PEB-NP-HAN	2"	Turf Rotor	92.40	8	69.45	0.7 in/h
19	Rain Bird PEB-NP-HAN	2"	Turf Rotor	55.80	7	68.11	1.4 in/h
20	Rain Bird PEB-NP-HAN	2"	Turf Rotor	55.00	8	68.53	0.83 in/h
21	Rain Bird PEB-NP-HAN	2"	Turf Rotor	63.60	4	67.46	1.1 in/h
22	Rain Bird PEB-NP-HAN	2"	Turf Rotor	89.00	14	70.42	0.94 in/h
23	Rain Bird PEB-NP-HAN	2"	Turf Rotor	96.00	8	69.45	0.72 in/h
24	Rain Bird PEB-NP-HAN	2"	Turf Rotor	96.00	8	71.94	0.47 in/h
25	Rain Bird PEB-NP-HAN	2"	Turf Rotor	67.80	5	67.84	1.07 in/h
26	Rain Bird PEB-NP-HAN	2"	Turf Rotor	63.60	4	67.02	1.0 in/h
27	Rain Bird PEB-NP-HAN	2"	Turf Rotor	45.60	12	68.83	0.79 in/h
28	Rain Bird PEB-NP-HAN	2"	Turf Rotor	38.00	9	67.46	0.45 in/h
29	Rain Bird PEB-NP-HAN	2"	Turf Rotor	96.00	8	69.82	0.88 in/h
30	Rain Bird PEB-NP-HAN	2"	Turf Rotor	96.00	8	71.29	1.0 in/h



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ADDENDUM 1 05-11-2022

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IRRIGATION NOTES FOR:
KELSO HIGH SCHOOL PRACTICE FIELDS
A SITE LOCATED IN THE CITY OF KELSO, WASHINGTON



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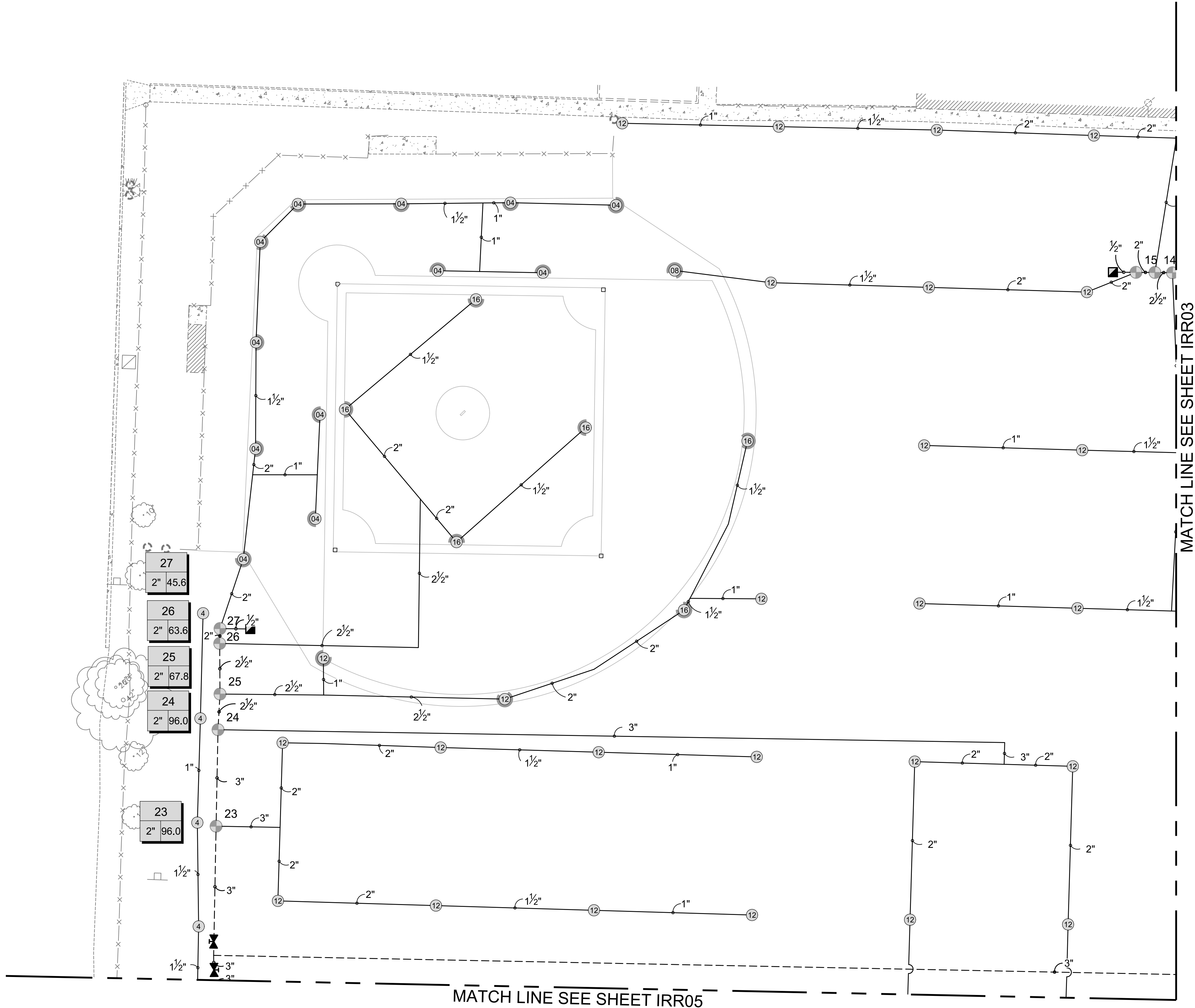
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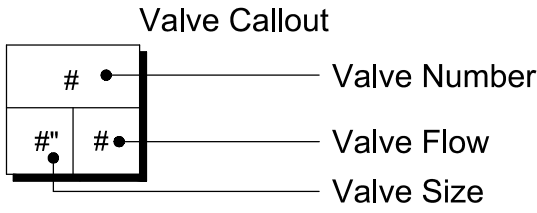
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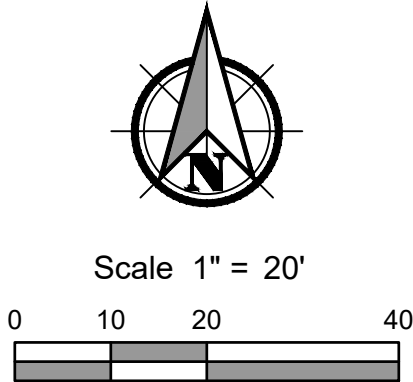
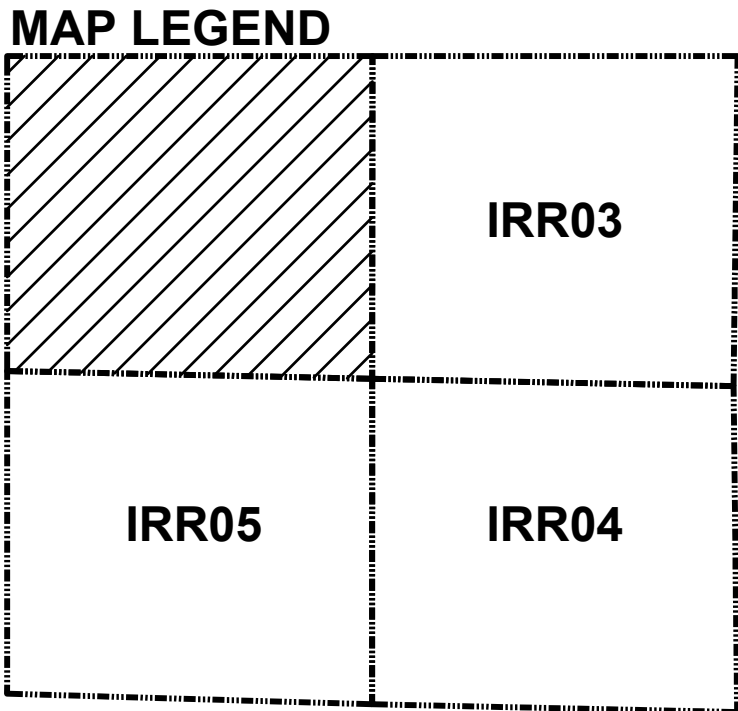


LEGEND	
SYMBOL	MANUFACTURER/MODEL
04	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
06	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
08	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
10	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
12	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
16	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
18	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
SYMBOL	MANUFACTURER/MODEL
	Rain Bird PEB-NP-HAN-PRS-D 2"
	Rain Bird 33-DLRC 3/4"
POC	Point of Connection 3" Existing Main Line
	Ball Valve, 2" PVC Schedule 80
	Irrigation Lateral Line: PVC Schedule 40-NP 1"
	Irrigation Lateral Line: PVC Schedule 40-NP 1 1/2"
	Irrigation Lateral Line: PVC Schedule 40-NP 2"
	Irrigation Lateral Line: PVC Schedule 40-NP 2 1/2"
	Irrigation Lateral Line: PVC Schedule 40-NP 3"
	Irrigation Mainline: PVC Schedule 40-NP 2 1/2"
	Irrigation Mainline: PVC Schedule 40-NP 3"



IRRIGATION CONSTRUCTION NOTES

1 LOCATE EXISTING MAINLINE AND TIE INTO SYSTEM.



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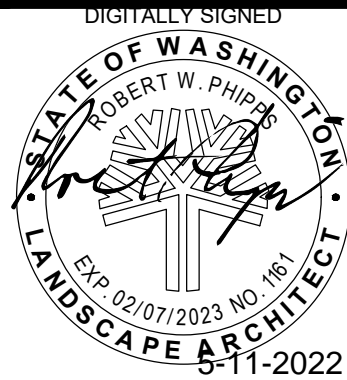
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IRRIGATION PLAN FOR:
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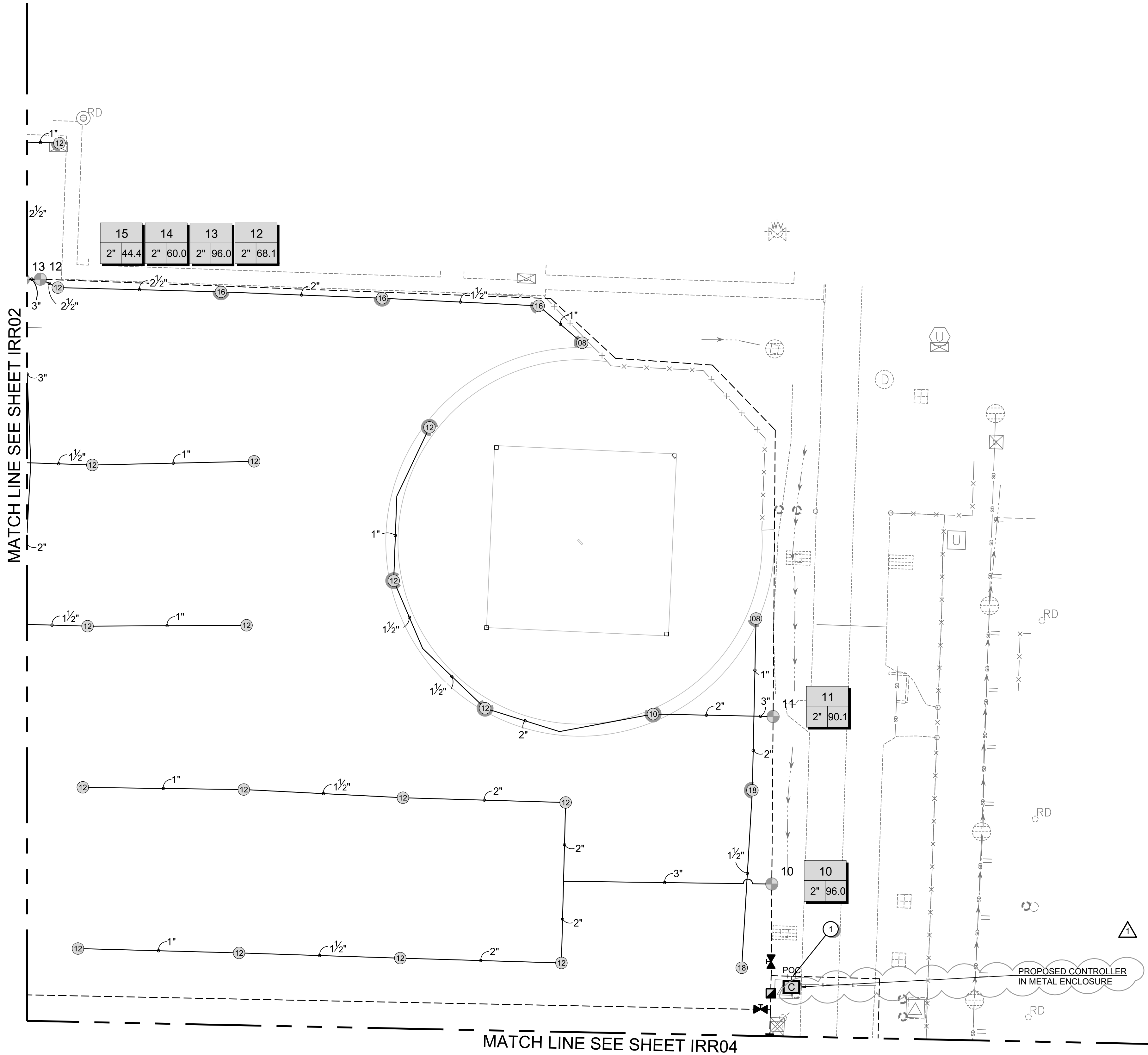
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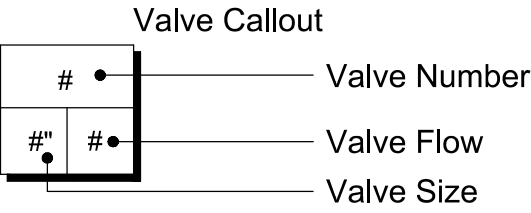
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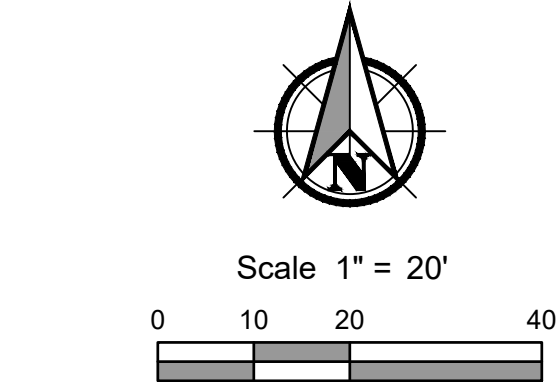
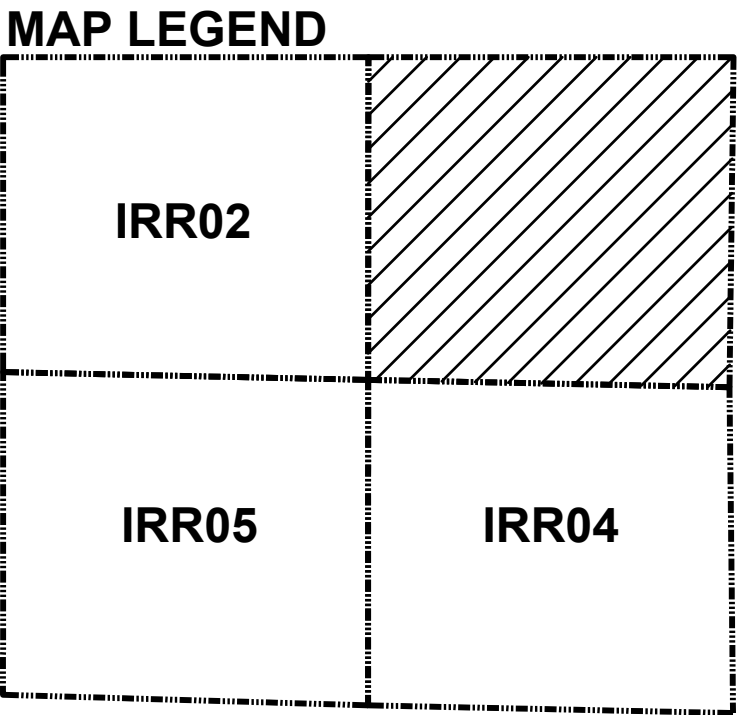
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LEGEND	
SYMBOL	MANUFACTURER/MODEL
04	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
06	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
08	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
10	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
12	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
16	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
18	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
SYMBOL	MANUFACTURER/MODEL
	Rain Bird PEB-NP-HAN-PRS-D 2"
	Rain Bird 33-DLRC 3/4"
POC	Point of Connection 3" Existing Main Line
	Ball Valve, 2" PVC Schedule 80
	Irrigation Lateral Line: PVC Schedule 40-NP 1"
	Irrigation Lateral Line: PVC Schedule 40-NP 1 1/2"
	Irrigation Lateral Line: PVC Schedule 40-NP 2"
	Irrigation Lateral Line: PVC Schedule 40-NP 2 1/2"
	Irrigation Lateral Line: PVC Schedule 40-NP 3"
	Irrigation Mainline: PVC Schedule 40-NP 2 1/2"
	Irrigation Mainline: PVC Schedule 40-NP 3"



- IRRIGATION CONSTRUCTION NOTES**
- 1 LOCATE EXISTING MAINLINE AND TIE INTO SYSTEM.



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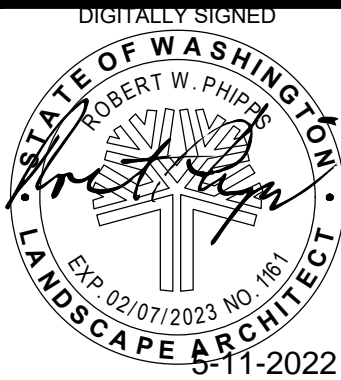
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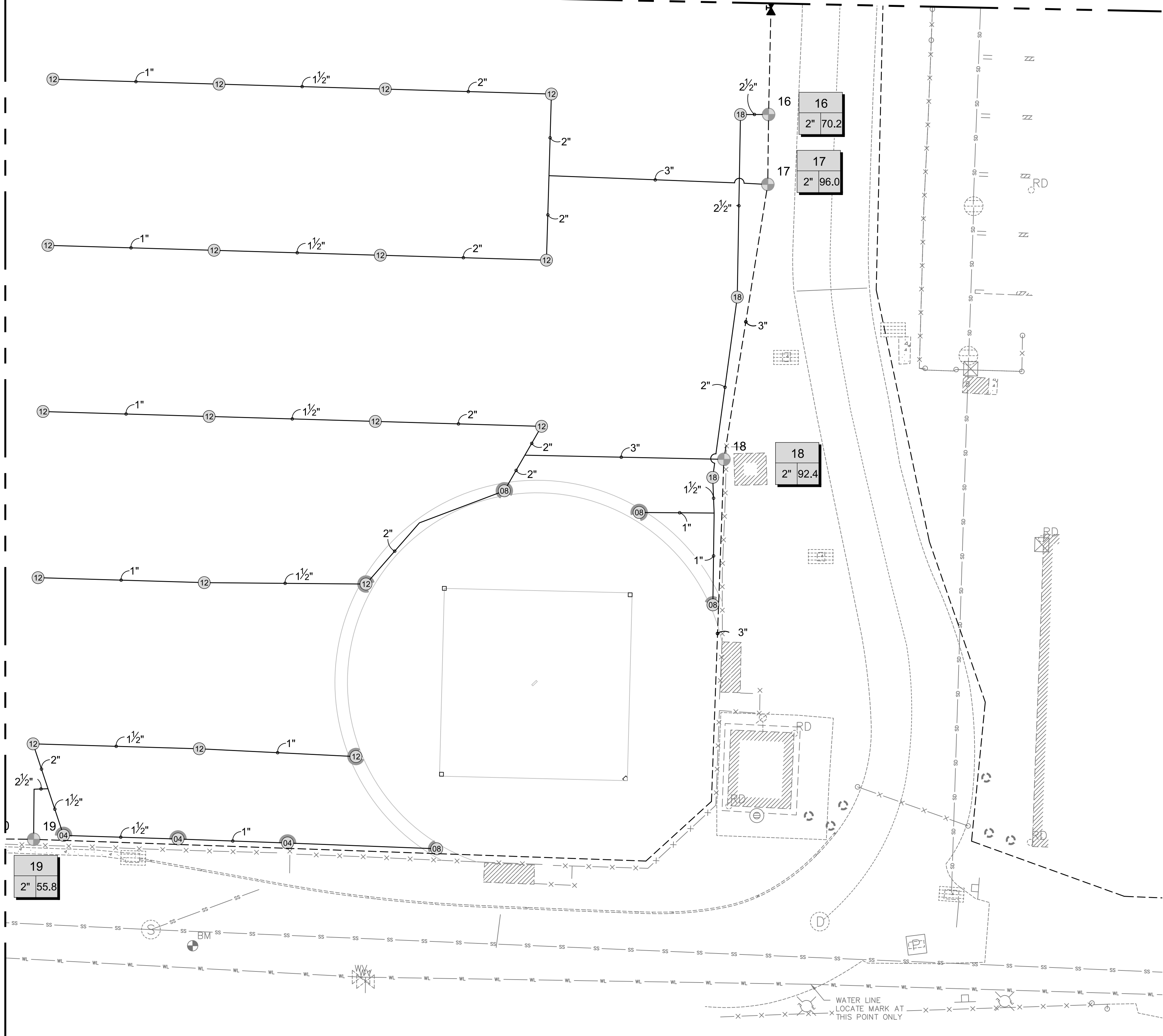
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SHEET 19 OF 29

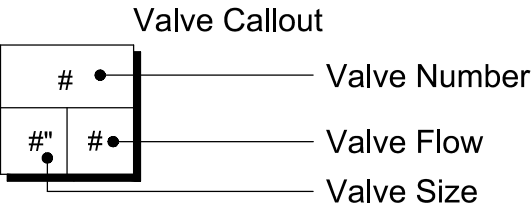
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MATCH LINE SEE SHEET IRR05

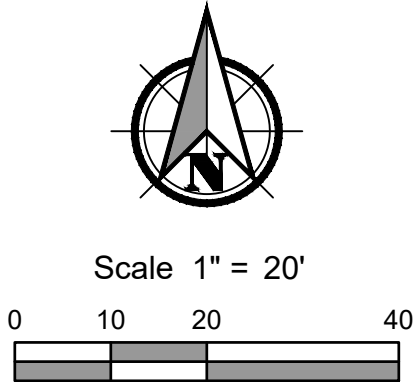
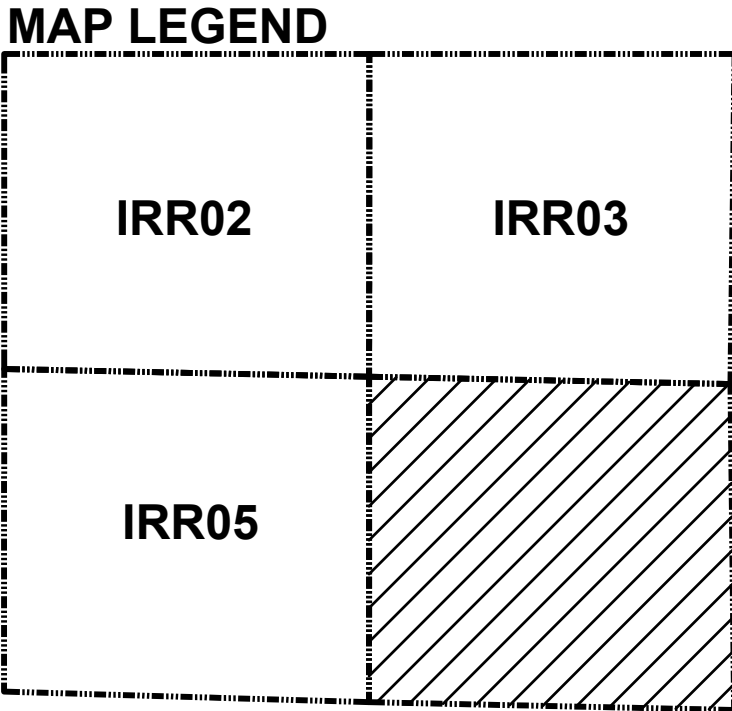
MATCH LINE SEE SHEET IRR03



LEGEND	
SYMBOL	MANUFACTURER/MODEL
04	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
06	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
08	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
10	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
12	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
16	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
18	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
SYMBOL	MANUFACTURER/MODEL
●	Rain Bird PEB-NP-HAN-PRS-D 2"
■	Rain Bird 33-DLRC 3/4"
POC	Point of Connection 3" Existing Main Line
✕	Ball Valve, 2" PVC Schedule 80
—	Irrigation Lateral Line: PVC Schedule 40-NP 1"
—	Irrigation Lateral Line: PVC Schedule 40-NP 1 1/2"
—	Irrigation Lateral Line: PVC Schedule 40-NP 2"
—	Irrigation Lateral Line: PVC Schedule 40-NP 2 1/2"
—	Irrigation Lateral Line: PVC Schedule 40-NP 3"
---	Irrigation Mainline: PVC Schedule 40-NP 2 1/2"
---	Irrigation Mainline: PVC Schedule 40-NP 3"



- IRRIGATION CONSTRUCTION NOTES**
- ① LOCATE EXISTING MAINLINE AND TIE INTO SYSTEM.



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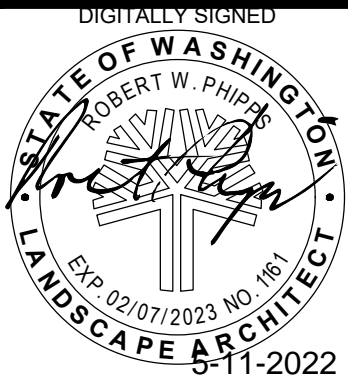
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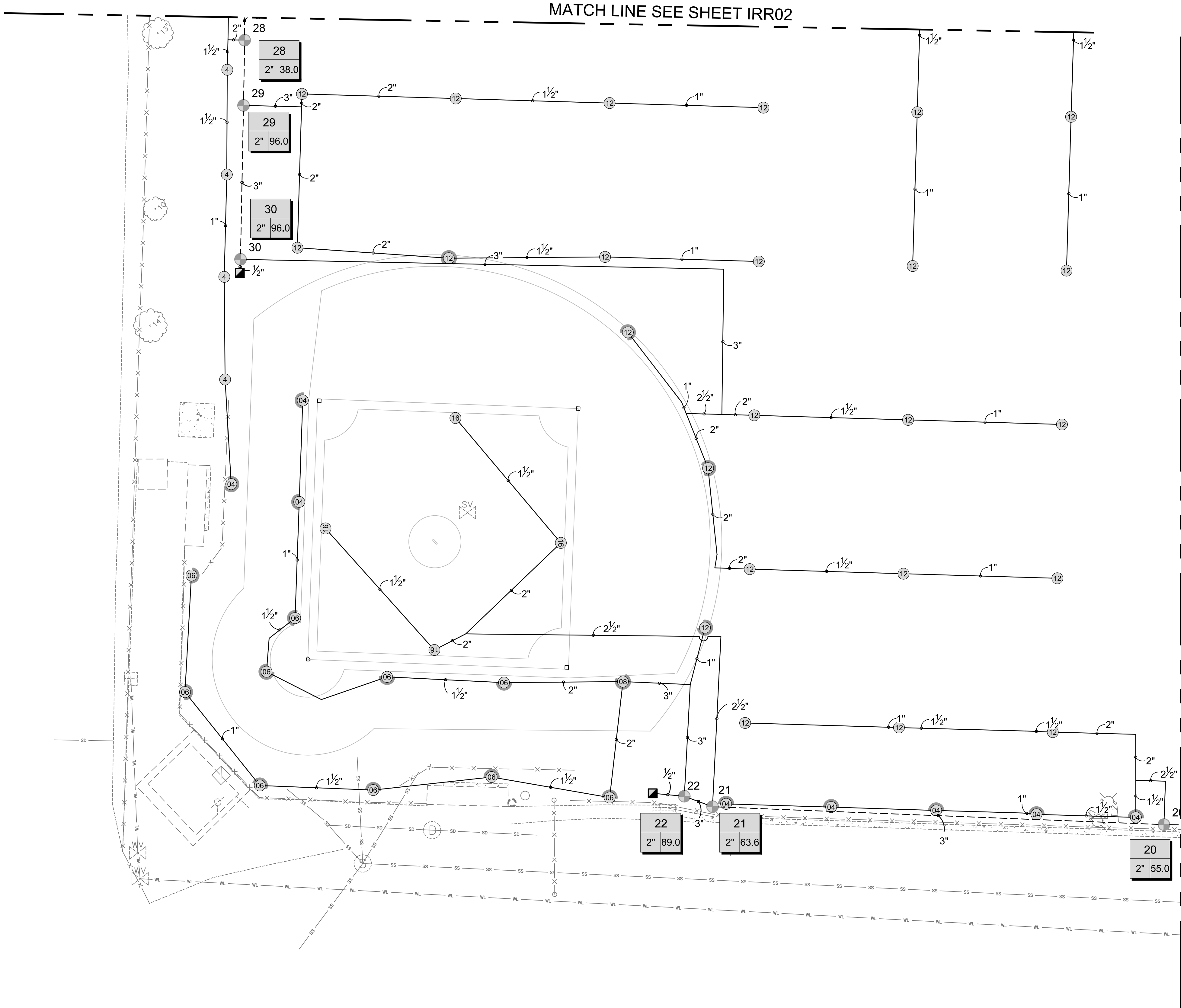


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71853-000

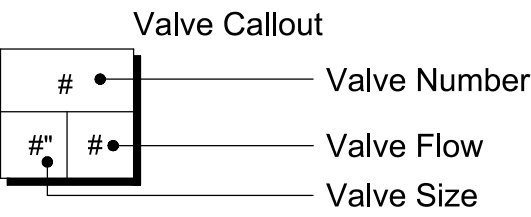
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SHEET **20** OF **29**

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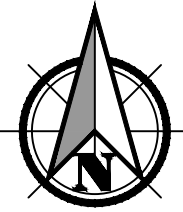
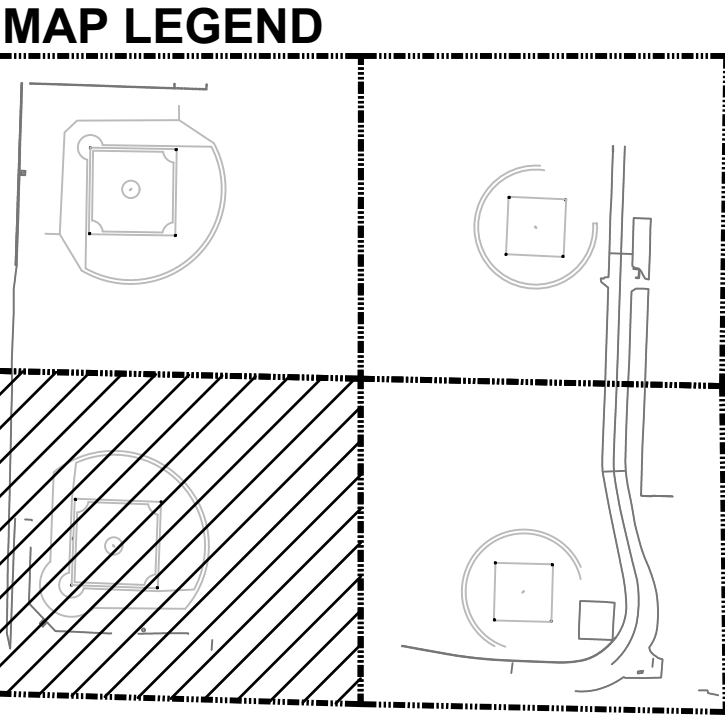


LEGEND	
SYMBOL	MANUFACTURER/MODEL
04	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
06	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
08	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
10	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
12	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
16	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
18	Rain Bird 8005-NP & Rain Bird 8005 Series Sod Cups
SYMBOL	MANUFACTURER/MODEL
●	Rain Bird PEB-NP-HAN-PRS-D 2"
■	Rain Bird 33-DLRC 3/4"
POC	Point of Connection 3" Existing Main Line
✂	Ball Valve, 2" PVC Schedule 80
—	Irrigation Lateral Line: PVC Schedule 40-NP 1"
—	Irrigation Lateral Line: PVC Schedule 40-NP 1 1/2"
—	Irrigation Lateral Line: PVC Schedule 40-NP 2"
—	Irrigation Lateral Line: PVC Schedule 40-NP 2 1/2"
—	Irrigation Lateral Line: PVC Schedule 40-NP 3"
---	Irrigation Mainline: PVC Schedule 40-NP 2 1/2"
---	Irrigation Mainline: PVC Schedule 40-NP 3"



IRRIGATION CONSTRUCTION NOTES

- 1 LOCATE EXISTING MAINLINE AND TIE INTO SYSTEM.



Scale 1" = 20'

0 10 20 40

PERMIT SET

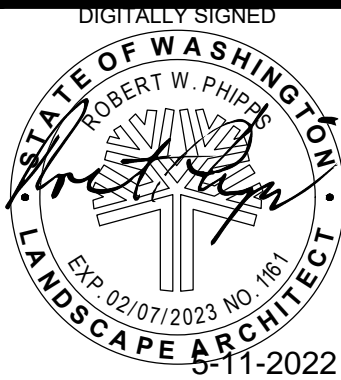
PBS Engineering and
Environmental Inc.
5245 SE Test Center Drive,
Suite 200
Vancouver, WA 98683
360.955.3488
pbsusa.com



IRRIGATION PLAN FOR:
KELSO HIGH SCHOOL PRACTICE FIELDS
A SITE LOCATED IN THE CITY OF KELSO, WASHINGTON



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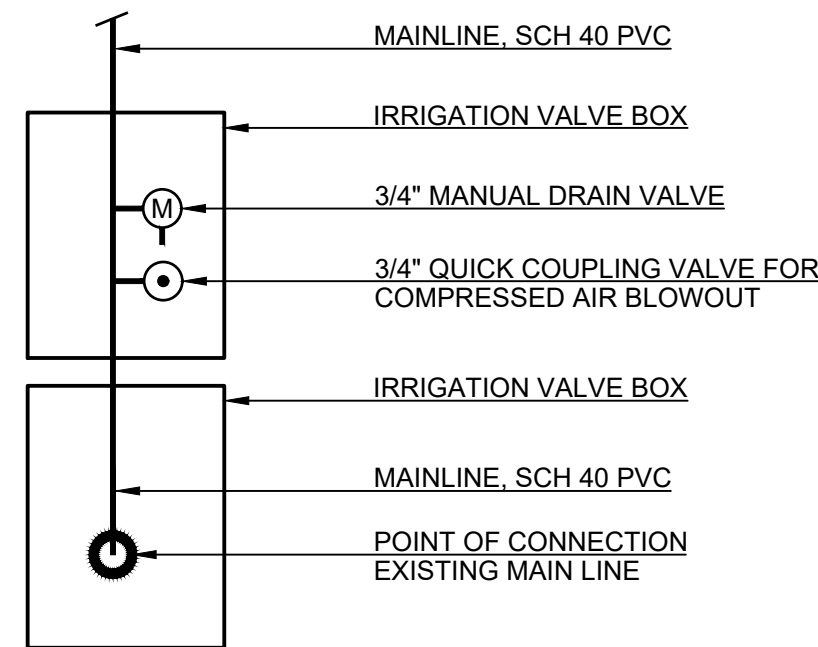
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71853-000

SHEET ID

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SHEET **21** OF **29**

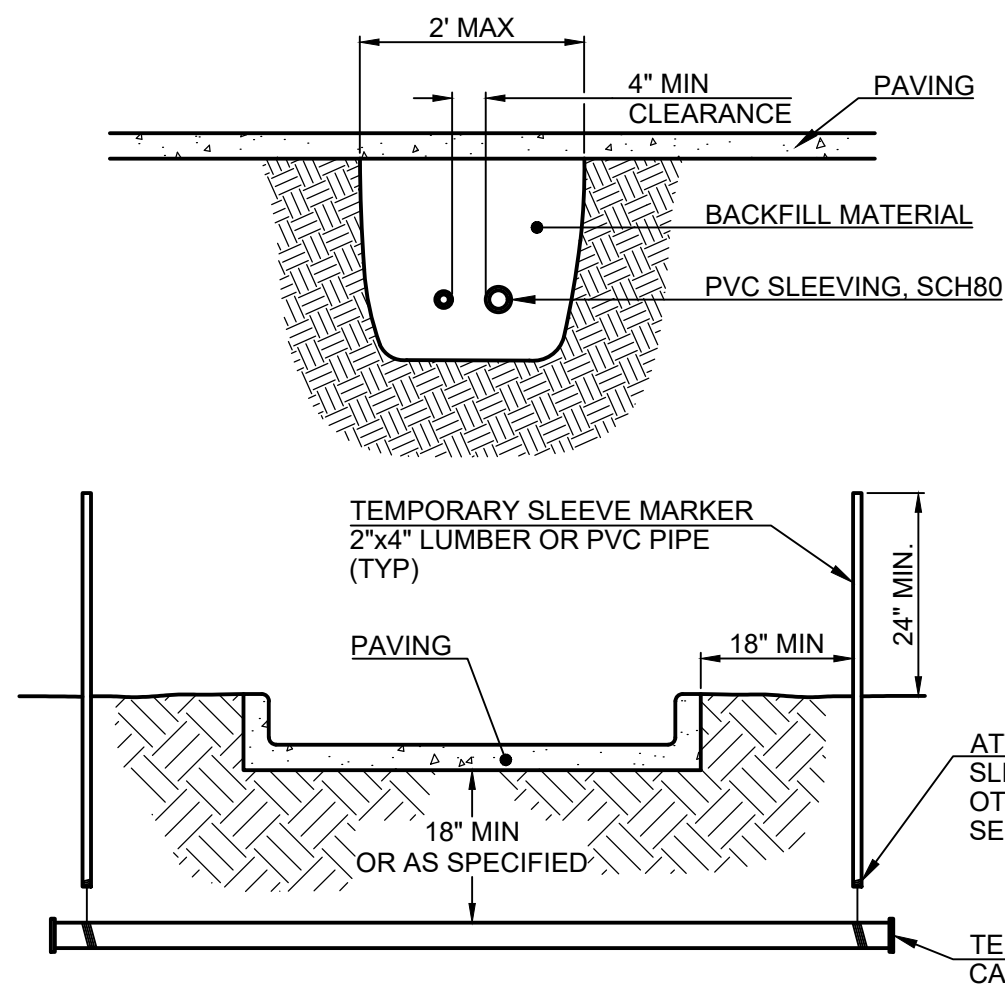


NOTES:

1. DOUBLE CHECK VALVE MUST BE ON THE WASHINGTON STATE APPROVED LIST.
2. INSTALLATION AND COMPONENTS SHALL FOLLOW JURISDICTION'S STANDARD PLANS.

Point of Connection

NOT TO SCALE

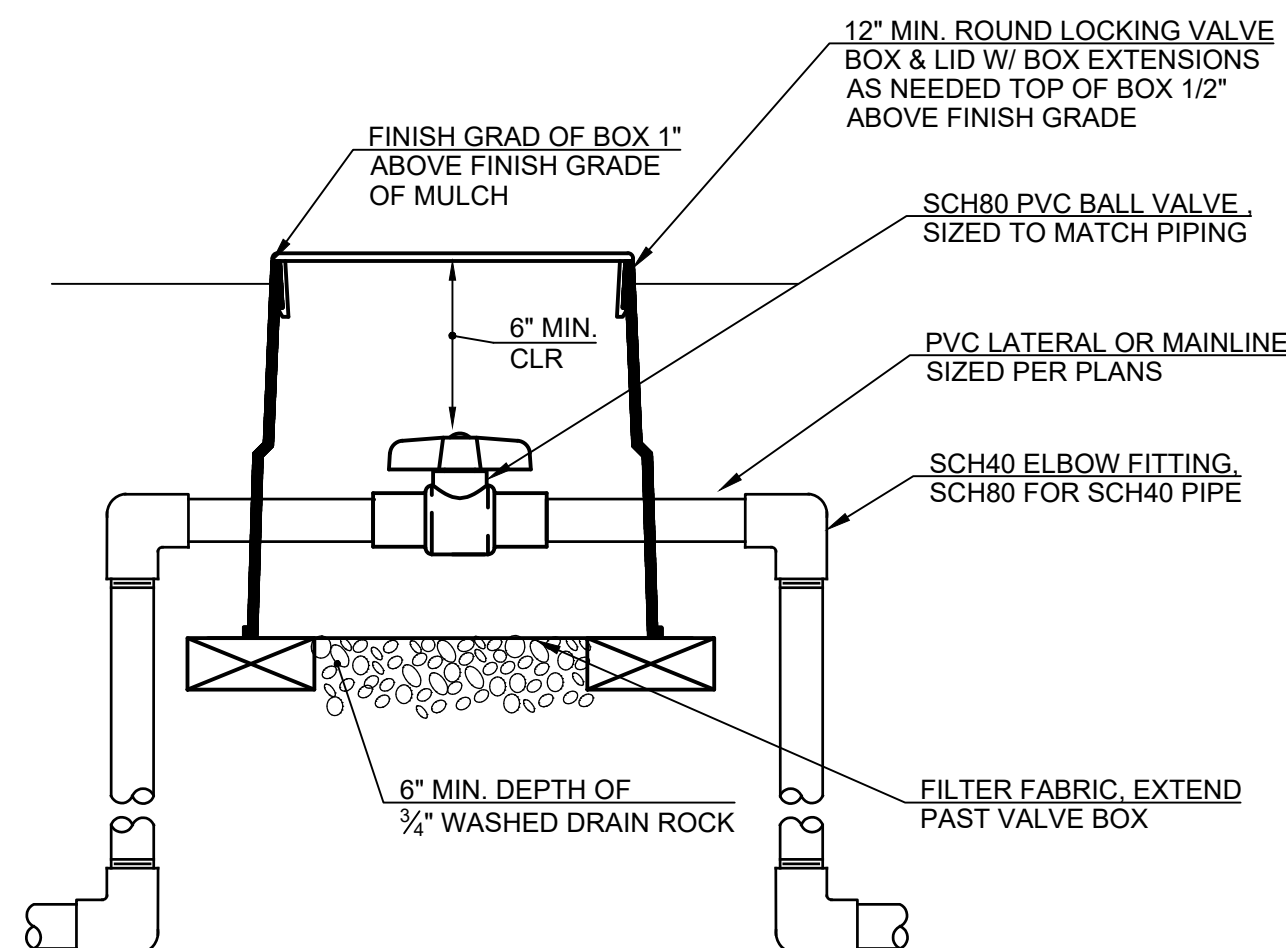


NOTES:

1. ALL PVC IRRIGATION SLEEVES TO BE SCHEDULE 40 PVC PIPE.
2. ALL JOINTS TO BE SOLVENT WELDED AND WATERTIGHT.
3. MECHANICALLY TAMP TO 95% PROCTOR.

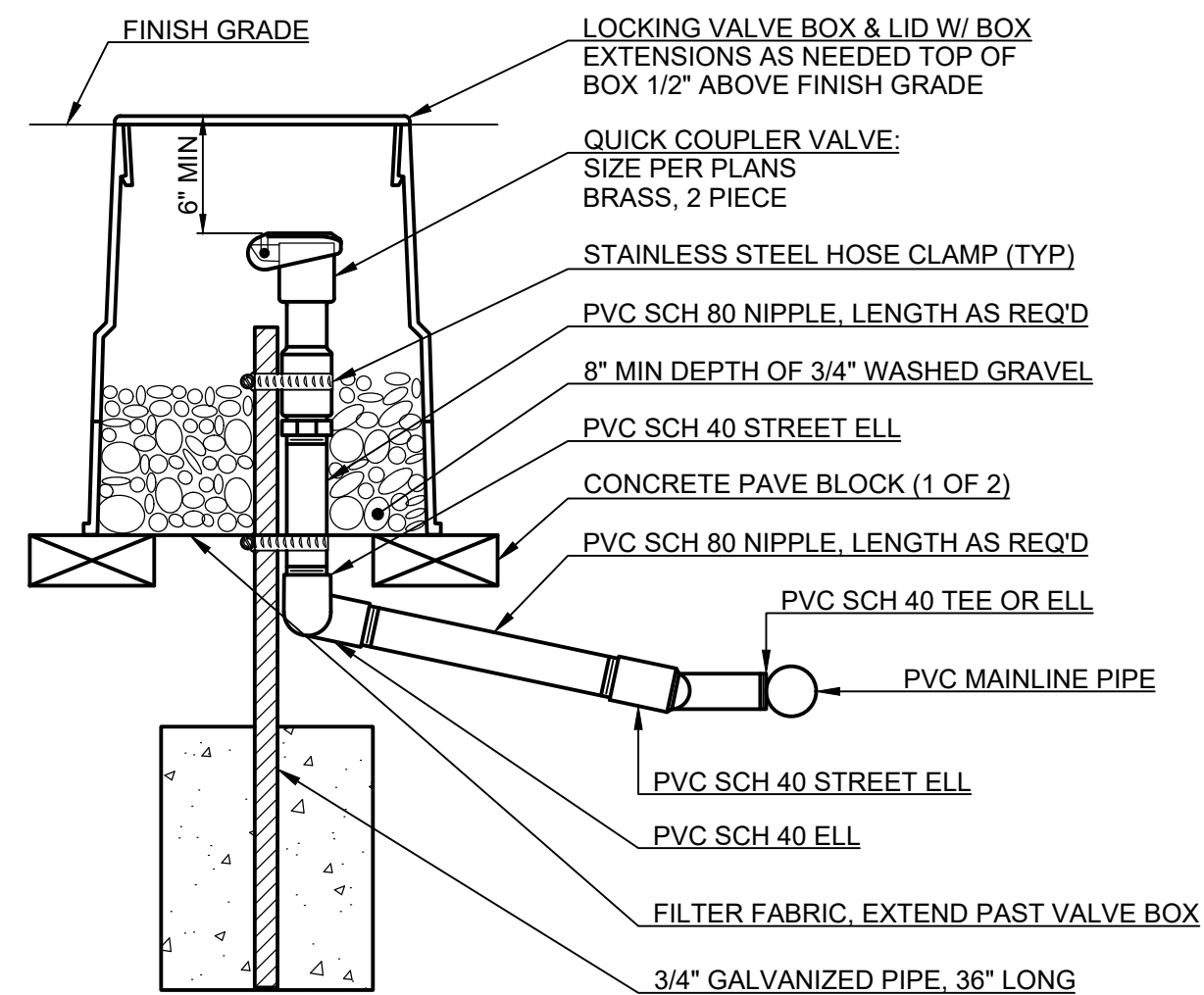
Sleeving

NOT TO SCALE



Ball Valve

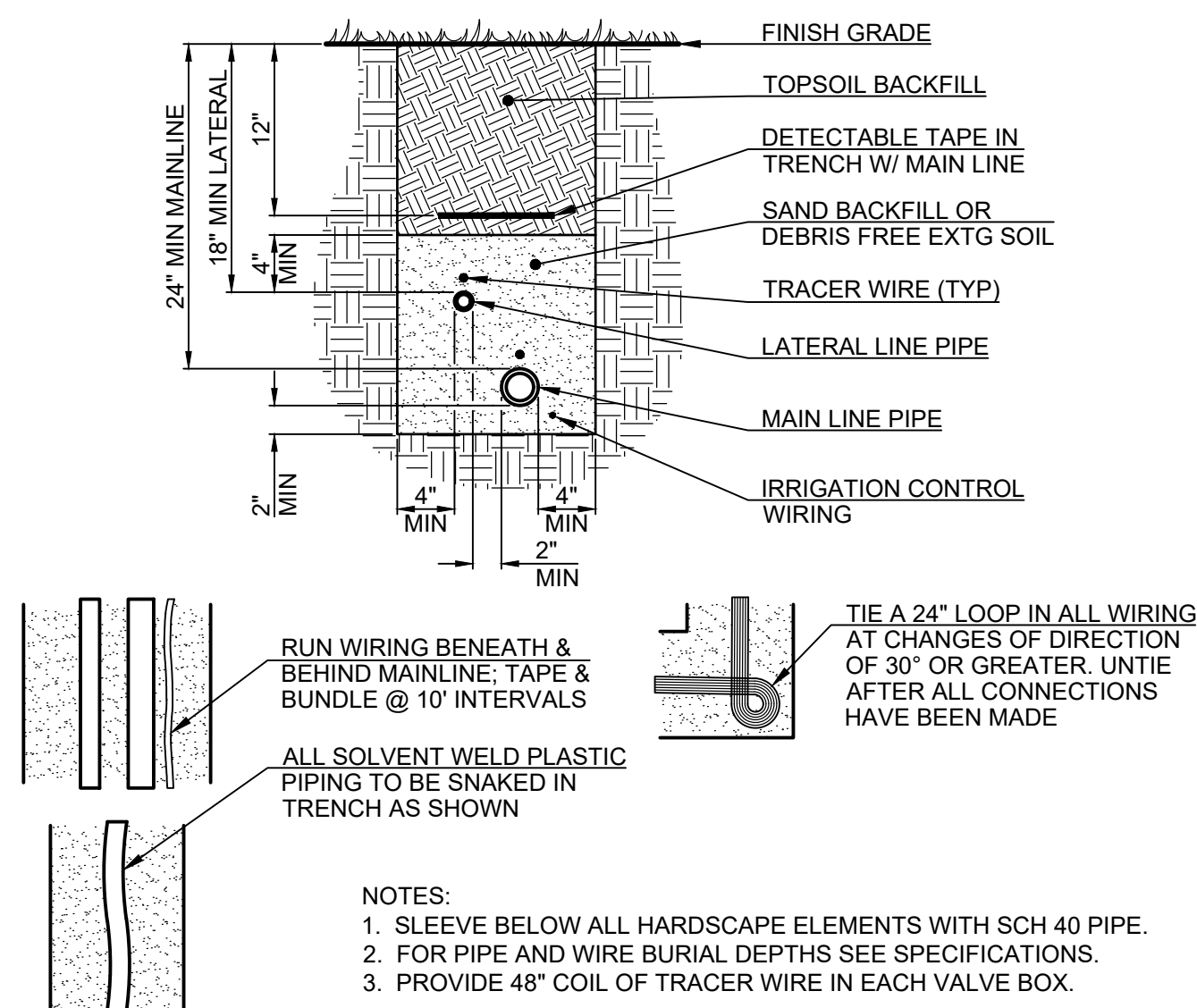
NOT TO SCALE



NOTE: FURNISH FITTINGS AND PIPING NOMINALLY SIZED
IDENTICAL TO NOMINAL QUICK COUPLING VALVE INLET SIZE

Quick Coupling Valve

NOT TO SCALE

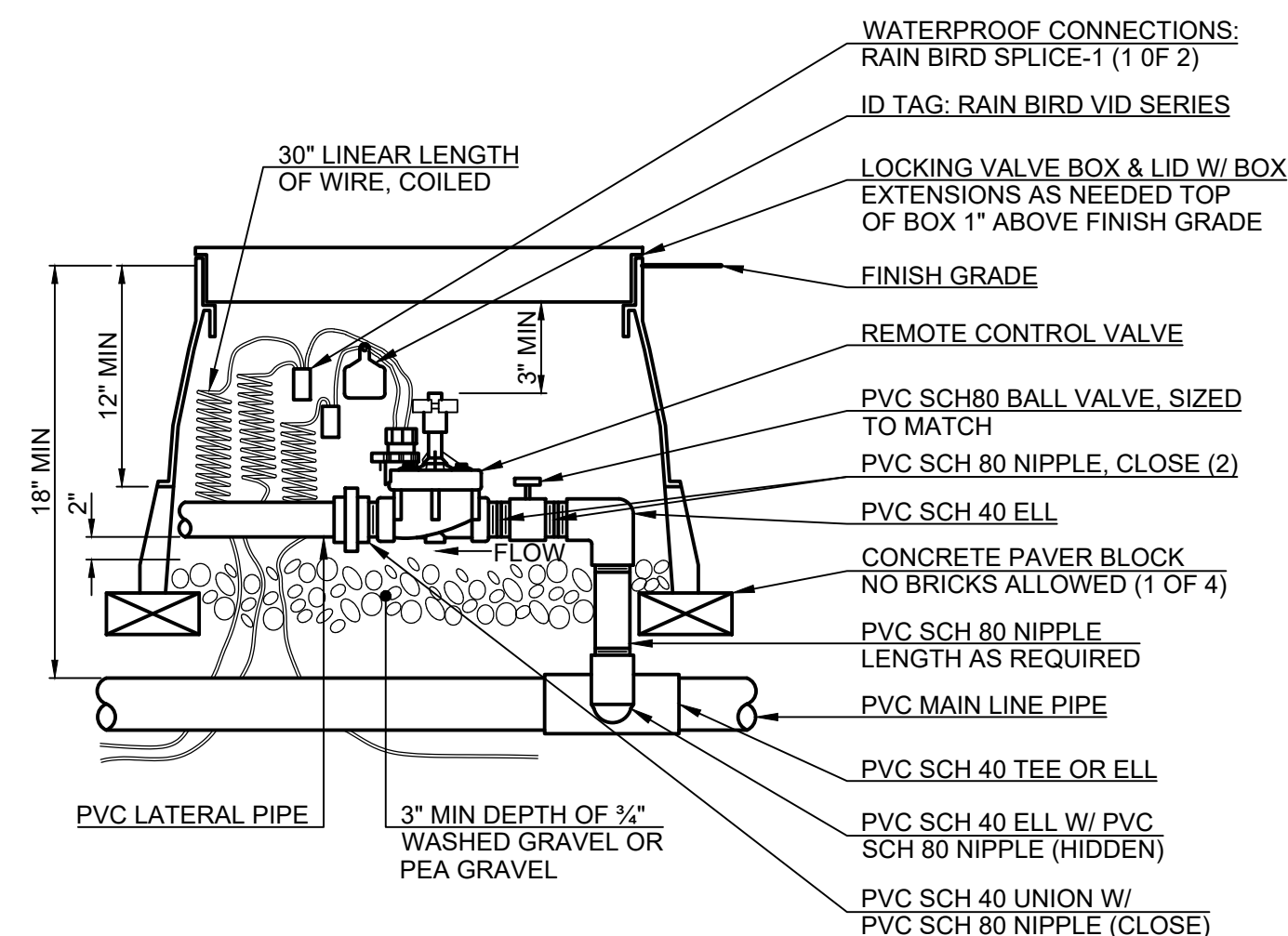


NOTES:

1. SLEEVE BELOW ALL HARDSCAPE ELEMENTS WITH SCH 40 PIPE.
2. FOR PIPE AND WIRE BURIAL DEPTHS SEE SPECIFICATIONS.
3. PROVIDE 48" COIL OF TRACER WIRE IN EACH VALVE BOX.

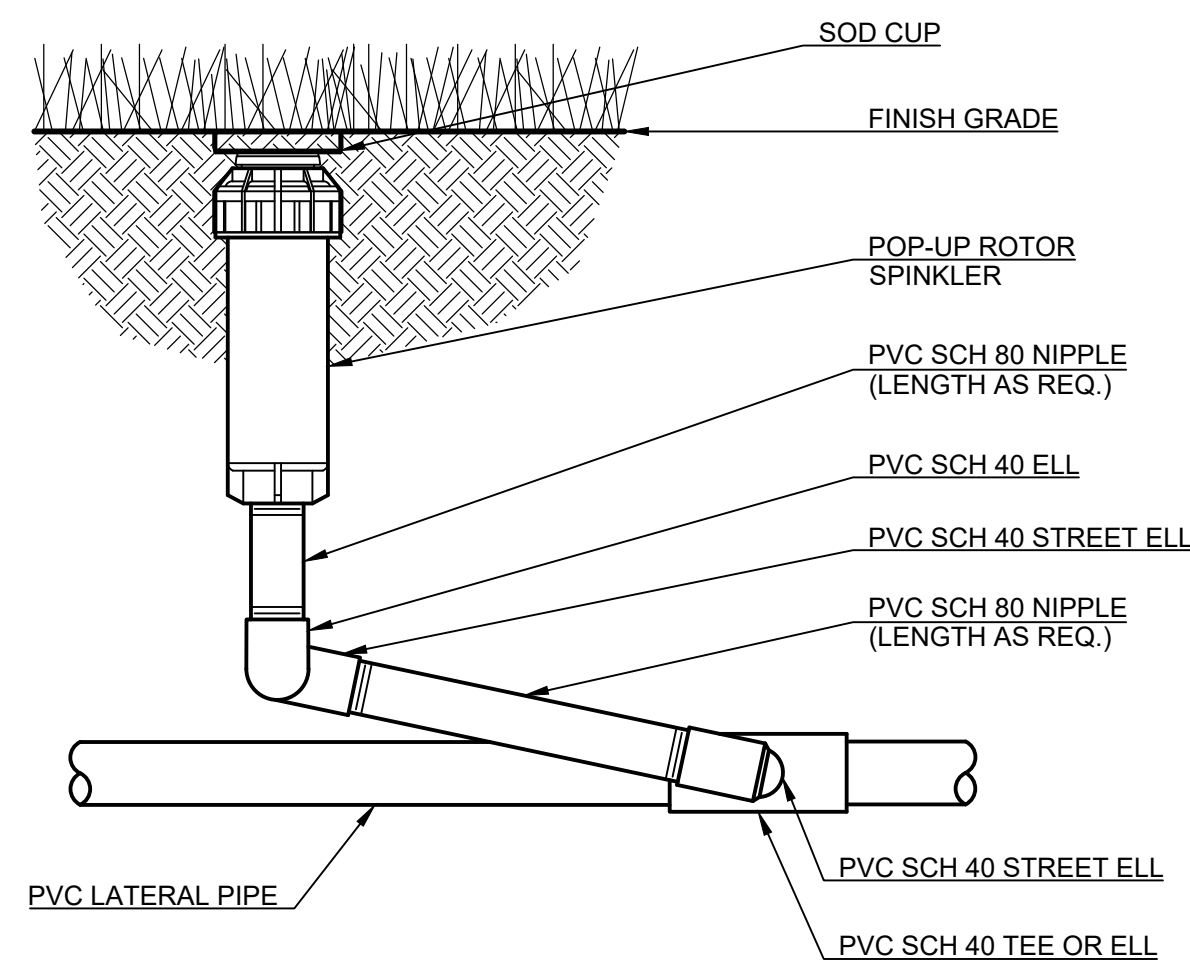
Trench Detail

NOT TO SCALE



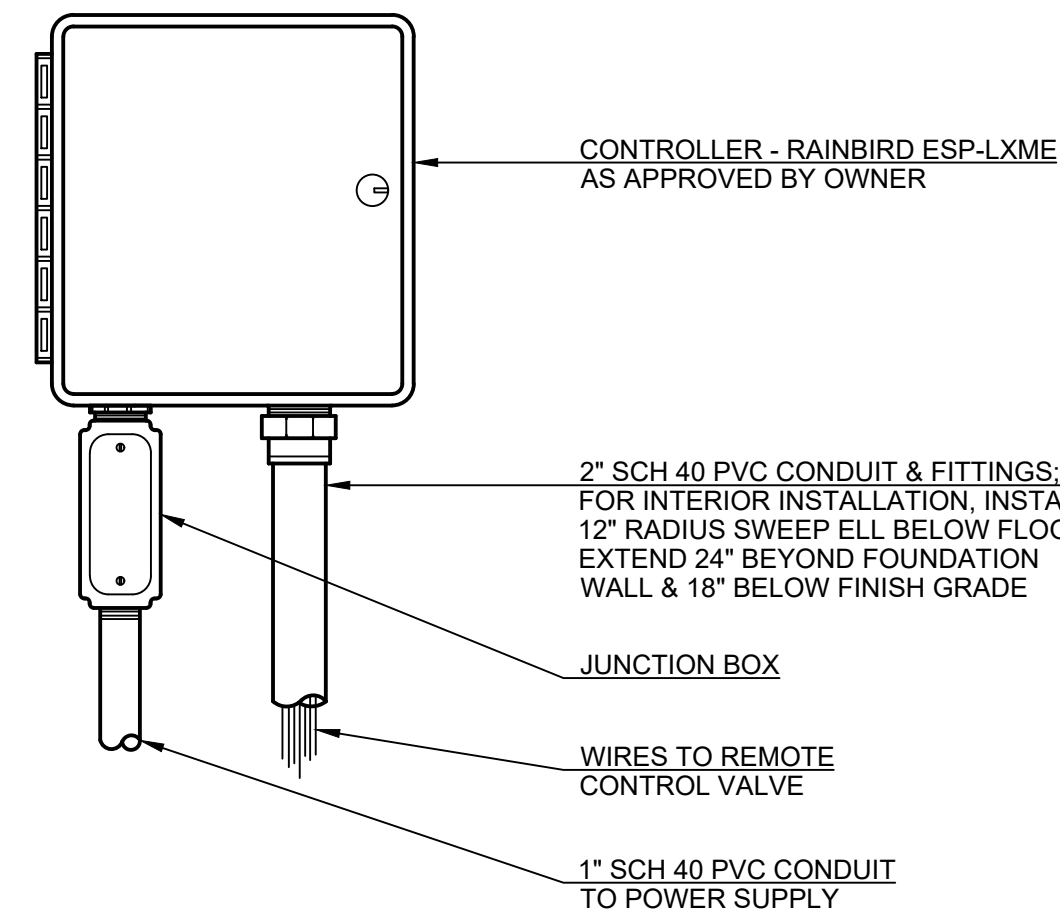
Remote Control Valve

NOT TO SCALE



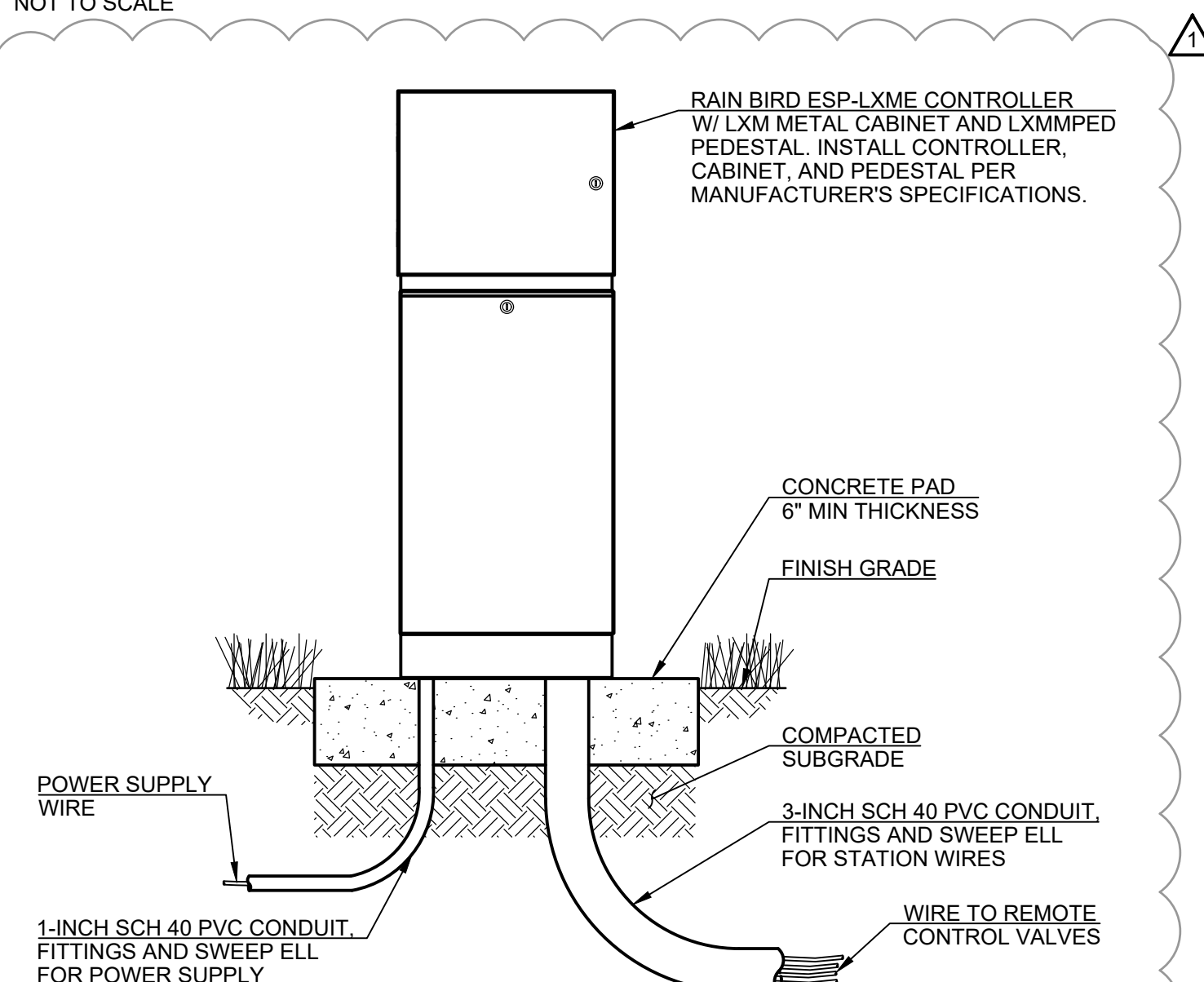
Rotary Spray Head With Sod Cup

NOT TO SCALE



Controller

NOT TO SCALE



Controller in Pedestal

NOT TO SCALE

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PLANTING IRRIGATION

PART 1 - GENERAL

- 1.1 SUMMARY OF WORK:** Irrigation components, performance requirements, installation of piping, installation of spray/rotor heads, installation of valves, submittal requirements, maintenance and warranties.
- 1.2 SUBMITTALS**
- A. Components:
- General duty valves; manual drain valves, quick-coupling valves, ball valves, backflow preventors.Sprinklers; Spray head, rotors and nozzles.
 - Controllers including wiring diagrams.
 - Control valves boxes and boxes for other valves including backflow preventor.
 - Solvent cement and separate primer.
 - Wiring including splice kits.
 - Specialty valves
- B. Variable Pump Drive: Shop drawings showing components and installation of work for variable pump drive bypass with existing well pump. Submit to Landscape Architect prior to installation. The drawings shall show all components and fittings to execute the work. Submit manufacturer provided enclosure and controller mounting.
- C. Controller Timing Schedule: Indicate timing settings for each automatic controller zone. Photocopy control valve schedule from updated Drawings, laminate, and tape to inside of each controller.
- D. Operation and Maintenance Data: For sprinklers, controllers, and automatic control valves to include in operation and maintenance manuals. Submit to owner before substantial completion of the project, and for public works projects, submit to Landscape Architect for review and approval before substantial completion of the project.
- E. As-Built Drawings: Contractor to supply as-built irrigation drawings to the Landscape Architect or Owner's Representative. The drawings shall show locations of point-of-connection, controller, all valves, mainline pipe runs, wire runs, and any deviations from the irrigation plan.

1.3 PERFORMANCE & QUALITY ASSURANCE

- A. Irrigation zone control shall be automatic operation with controller and automatic control valves.
- B. Coverage: Make minor adjustments necessary to avoid plantings and obstructions such as signs and light standards. Maintain 100 percent as follows: triple head to head minimum coverage for lawn; double head to head minimum coverage for shrubs and groundcovers. Drip irrigation spacing shall apply water at 1-inch water/week using evapotranspiration and expected soil type.
- C. Minimum Working Pressures: The following are minimum pressure requirements for piping, valves, and specialties unless otherwise indicated:
- Irrigation Main Piping: 200psi.
 - Circuit Piping: 200psi.
- D. All work shall be installed by a qualified irrigation contractor with a minimum 5 years of local experience in medium to large scale irrigation systems, with sufficient crews to meet project completion schedule.
- E. All materials shall be supplied from commercially available supplier. Contractor shall guarantee irrigation materials and workmanship for one year starting on the date of final acceptance.
- F. Contractor shall have a minimum 5 years of installation experience with well and pump provided source irrigation systems. Provide three (3) sources of project examples utilizing a well pump as source of irrigation watering.

1.4 PROJECT CONDITIONS

- A. Interruption of Existing Water Service: Do not interrupt water service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water service according to requirements indicated:
- Notify General Contractor, Construction Manager, and Owner no fewer than two days in advance of proposed interruption of water service.
 - Do not proceed with interruption of water service without General Contractor's, Construction Manager's, and Owner's written permission.
- B. Utilities: Determine location of above grade and underground utilities. Call for a utility locate a minimum of 48 hours, but no more than 10 days, in advance of work. Perform work in a manner which will avoid damage. Repair all damage to the satisfaction of the utility owner at no cost to owner. Hand excavate, as required. Maintain grade stakes until removal is mutually agreed upon by all parties concerned.

PART 2 - PRODUCTS

2.1 PIPE BEDDING AND BACKFILL

- A. Native backfill may be used of if free of debris and/or rocks 1" or greater in size. Otherwise use clean river sand, free of rocks and debris.

2.2 PIPES, TUBES, FITTINGS AND SLEEVEING

- A. Comply with requirements in the piping schedule for applications of pipe, tube, and fitting materials, and for joining methods for specific services, service locations, and pipe sizes.
- B. PVC Pipe: ASTM D 1785, PVC 1120 compound, Schedules 40 and 80.
- PVC Socket Fittings: ASTM D 2466, Schedules 40 and 80.
 - PVC Threaded Fittings: ASTM D 2464, Schedule 80.
 - PVC Socket Unions: Construction similar to MSS SP-107, except both headpiece and tailpiece shall be PVC with socket ends.
- C. PVC Pipe, Pressure Rated: ASTM D 2241, PVC 1120 compound, SDR 21 and SDR 26.
- PVC Socket Fittings: ASTM D 2467, Schedule 80.
 - PVC Socket Unions: Construction similar to MSS SP-107, except both headpiece and tailpiece shall be PVC with socket or threaded ends.
- D. Sleeveing: ASTM D 2464, Schedule 80 or as shown in the Plans.

2.3 PIPING JOINING MATERIALS

- A. Solvent Cements for Joining PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.

2.4 MANUAL VALVES

- A. Brass Ball Valves: MSS SP-110, two-piece forged brass body with full port, chrome-plated brass ball and brass stem; PTFE or TFE seats; SWP rating of 150 psig and CWP rating of 600 psig; and threaded end connections.
- B. Bronze Ball Valves: MSS SP-110, two-piece forged bronze body with full port, chrome-plated brass ball and bronze stem; PTFE or TFE seats; SWP rating of 150 psig and CWP rating of 600 psig; and threaded end connections.
- C. Plastic Ball Valves: MSS SP-122 union type, PVC body with full port ball, socket or threaded ends and a pressure rating no less than 150 psig.

2.5 VARIABLE FREQUENCY DRIVE WITH ENCLOSURE:

- A. Compact Low Profile 5HP VFD Pump Station, 5 HP Boost Model; Up to 53 psi boost; Up to 120 gpm.
- B. VFD Station shall include:
- Variable Frequency Drive (VFD)
 - Pump Start Relay
 - Aluminum Deck and Enclosure
 - Stainless Steel Piping
 - Isolation Valve for maintenance and priming
 - Manual Switch provides user full control and override capabilities
 - 2"~ Discharge, 2"Intake NPT (Boost), 2 1/2" Suction Port NPT (Suction Lift)
 - Mounting options for Rain Bird Controllers
 - Enclosure/External Connections:
 - Marine grade aluminum enclosure and deck
 - Stainless Steel piping
 - Fused main power disconnect
 - Pump Control
 - Runs based on signal from irrigation controller
 - 24VAC Pump start relay included. Other voltages available as an accessory.
 - 130 °F Temperature cutout switch
 - Electrical Features: Incoming power: Three phase 208V, 220V, 230V AC,
 - Back panel for mounting Rain Bird controllers (Pre-drilled for ESP-Me, ESP-LXMe, and ESP-LXD Series Controllers), powered separately

Rainbird Contact: 520-806-5620 or email: pumps@rainbird.com

2.6 AUTOMATIC CONTROL VALVES

- A. Plastic, Automatic Control Valves: Molded-plastic body, normally closed, diaphragm type with manual-flow adjustment, and operated by 24-V ac solenoid or as shown in the Plans

2.7 TRANSITION FITTINGS

- A. General Requirements: Same size as, and with pressure rating at least equal to and with ends compatible with, piping to be joined.
- B. Transition Couplings: AWWA C219, metal sleeve-type coupling for underground pressure piping.
- C. Plastic-to-Metal Transition Fittings: PVC one-piece fitting with manufacturer's Schedule 80 equivalent dimensions; one end with threaded brass insert, and one solvent-cement-socket [or threaded] end.
- D. Plastic-to-Metal Transition Unions: MSS SP-107, PVC four-part union. Include one brass or stainless-steel threaded end, one solvent-cement-joint or threaded plastic end, rubber O-ring, and union nut.

2.8 SPRINKLERS

- A. General Requirements: Designed for uniform coverage over entire spray area indicated at available water pressure.
- B. Plastic, Pop-up, Gear-Drive Rotary Sprinklers: ABS plastic body with plastic nozzle, stainless steel retraction spring, and corrosion resistant internal parts or as shown in the Plans.
- C. Plastic, Pop-up Spray Sprinklers: ABS plastic body with plastic nozzle, stainless steel retraction spring, and corrosion resistant internal parts or as shown in the Plans.

2.9 QUICK COUPLERS

- A. Factory-fabricated, bronze or brass, two-piece assembly. Include coupler water-seal valve; removable upper body with spring-loaded or weighted, rubber-covered cap; hose swivel with ASME B1.20.7, 3/4-11.5NH threads for garden hose on outlet; and operating key.
- Locking-Top Option: Vandal-resistant locking feature. Include two matching keys.

2.10 CONTROLLERS

- A. Controller Stations for Automatic Control Valves: Each station is variable from approximately 5 to 60 minutes. Include switch for manual or automatic operation of each station.
- Control Transformer: 24-V secondary, with primary fuse.
 - Timing Device: Adjustable, 24-hour, 14-day clock, with automatic operations to skip operation any day in timer period, to operate every other day, or to operate two or more times daily.
 - Manual or Semiautomatic Operation: Allows this mode without disturbing preset automatic operation.
 - Nickel-Cadmium Battery and Trickle Charger: Automatically powers timing device during power outages.
 - Surge Protection: Metal-oxide-varistor type on each station and primary power.
 - Moisture Sensor: Adjustable from one to seven days, to shut off water flow during rain.
 - Wiring: UL 493, Type UF multiconductor, with solid-copper conductors; insulated cable; suitable for direct burial.
 - Feeder-Circuit Cables: No. 12 AWG minimum, between building and controllers.
 - Low-Voltage, Branch-Circuit Cables: No. 14 AWG minimum, between controllers and automatic control valves; color-coded different from feeder-circuit-cable jacket color; with jackets of different colors for multiple-cable installation in same trench.
 - Splicing Materials: Manufacturer's packaged kit consisting of insulating, spring-type connector or crimped joint and epoxy resin moisture seal; suitable for direct burial.

2.11 BOXES FOR VALVES AND COMPONENTS

- A. Plastic Boxes: Box and cover, with open bottom and openings for piping; designed for installing 1/2 inch above finish grade. No more than two control valves per box.
- Size: As required for valves and service.
 - Shape: Round or Rectangular as needed for valve size.
 - Sidewall Material: PE, ABS, or FRP.
 - Cover Material: PE, ABS, or FRP.
 - Lid shall be T-type where the lid fits over the top flange of the valve box to keep debris from falling inside valve box when opening lid.
 - Lettering: "IRRIGATION."
- B. Drainage Backfill: Cleaned gravel or crushed stone, graded from 3/4 inch minimum to 3 inches maximum with filter fabric separation.

PART 3 - EXECUTION

3.1 EARTHWORK

- A. Refer to trenching details as shown on the Plans.
- B. Install warning tape directly above pressure piping, 12 inches below finished grades, except 6 inches below subgrade under pavement and slabs.
- C. Provide minimum cover over top of underground piping according to the following:
- Irrigation Piping: Minimum depth of 24 inches below finished grade for Mainline. Minimum depth of 18 inches below finished grade for lateral lines unless otherwise shown in the Plans.
 - Sleeves: 18 inches below grade under walks and paths. 24 inches below subgrade under roads.

3.2 PIPING INSTALLATION

- A. Install piping at minimum uniform slope of 0.5 percent down toward drain valves, free of sags and bends. Install groups of pipes parallel to each other, spaced to permit valve servicing.
- B. Install fittings for changes in direction and branch connections.
- C. Lay piping on solid subbase, uniformly sloped without humps or depressions.
- D. Install PVC piping in dry weather when temperature is above 40 degrees F. Allow joints to cure at least 24 hours at temperatures above 40 degrees F before testing.
- E. Install water regulators with shutoff valve and strainer on inlet and pressure gage on outlet.
- F. Install piping in sleeves under parking lots, roadways, and sidewalks.
- G. Vibratory plow pipe pulling is allowed up to maximum 1 1/2" pipe size for lateral pipe. Pipe pulling is not allowed for mainlines.
- H. Install transition fittings for plastic-to-metal pipe connections according to the following:
- Underground Piping:
 - NPS 1-1/2 and Smaller: Plastic-to-metal transition fittings.
 - NPS 2 and Larger: AWWA transition couplings.

3.3 JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- B. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Join pipe fittings and valves as follows:
- Apply appropriate tape or thread compound to external pipe threads. Tighten joints. Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- C. PVC Piping Solvent-Cemented Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
- Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements. Apply separate primer (not combination 1-step primer with solvent) to all pipes before applying cement.
 - PVC Pressure Piping: Join schedule number, ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
 - PVC Nonpressure Piping: Join according to ASTM D 2855.

3.4 TRENCH BOTTOMS & BACKFILL

- A. Trench bottoms shall be relatively smooth and of sand or soil free from rocks, roots, and any other material which might damage the pipe. Trenches in rock or other material unsuitable for trench bottoms shall be excavated 4" below the required depth and shall be backfilled to the required depth with sand free from rocks or stones.
- B. Trench backfill shall not be started until all piping has been inspected, tested, reviewed and approved after which backfilling shall be completed as soon as possible. All backfill material within 6 inches of the pipe shall consist of backfill material free of rocks, roots, and any other material which might damage the pipe. Follow sleeveing details as shown in the Plans.

3.5 VALVE INSTALLATION

- A. Pressure-Reducing Valves: Install in boxes for automatic control valves or aboveground between shutoff valves. Install full-size valved bypass.
- B. Drain Valves: Install ball valve with ell pointed downward in control-valve box with top 1/2 inch above finish grade.
- C. Quick Coupling Valves: Install in 10 inch round valve box with top 1/2 inch above finish grade where shown on Drawings. Also install at mainline high points for compressed air winterization. Record locations on project record drawings. Also install a valve at point of connection for compressed air winterization.
- D. Ball or Gate Valves: Install in valve box with top 1/2 inch above finish grade where shown on Plans. Also install at mainline low points for use as manual drain valves for winterization unless system will be winterized with compressed air. Record locations on project record drawings.

3.6 SPRINKLER INSTALLATION

- A. Install sprinklers after hydrostatic test is completed.
- B. Install sprinklers at manufacturer's recommended heights.
- C. Locate part-circle sprinklers to maintain a minimum distance of 4 inches from walls and 2 inches from other boundaries unless otherwise indicated.

3.7 AUTOMATIC IRRIGATION-CONTROL SYSTEM INSTALLATION

- A. Interior Mounting: Install interior controllers on wall at approved location.
- B. Exterior Mounting: Install exterior freestanding controllers on precast concrete bases or wall-mount controllers on exterior wall per manufacturer recommendations. Install at approved location.
- C. Install control cable in same trench as irrigation piping and at least 2 inches below or beside piping. Where not possible, mark locations on project record drawings and install detector tape 12 inches below finish grade. Install wiring with loops at control valves, controllers, and at changes in direction to allow for expansion. Bundle wiring in same trench at 10 foot intervals. Place all splices with waterproof connections in specified valve boxes. Record locations on the record drawings. Provide conductors of size not smaller than recommended by controller manufacturer. Install cable in separate sleeve under paved areas.
- D. Program the irrigation controller to provide proper run time to provide 1" of water per week during the months of April 1 to October 1. Place a laminated copy of the control valve schedule into the controller.

3.8 CONNECTIONS

- A. Comply with local requirements for piping specified for water supply from exterior water service piping, water meters, protective enclosures, and backflow preventers. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to equipment, valves, and devices to allow service and maintenance.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction. Ground all electrical powered controllers, valves, and devices.
- D. Connect wiring between controllers and automatic control valves.
- E. Arrange and provide electric power connection to controller by a qualified licensed electrician, at irrigation contractor's expense.

3.9 QUALITY CONTROL

- A. Tests and Inspections: After installation and before backfilling the trenches, charge system and test for leaks. Repair leaks and retest until no leaks exist. Backfilling may not occur until the pressure test has been performed by the contractor and passed works project, after test is re-performed and passes in the presence of the Landscape Architect.
- Cap and test mainline piping with minimum 100 psi static pressure (fully fill mainline with water and use a compressor to boost pressure to 100 psi). Open ball valves at control valves in order to test all mainline fitting. Tests may be performed at quick-coupling valve locations. Provide a test gauge that has been certified for accuracy in the past 12 months.
 - Open farthest lateral zone to purge air pockets within the mainline.
 - Isolate and disconnect test source compressor and water supply.
 - Allow to stand for one hour. A drop of 5 psi or more is considered as a leak, even if leaks are not visually observed during the test. Repair leak and defect with new materials and retest system until satisfactory results are obtained.
 - Operational Test: After electrical circuitry has been energized, operate controllers and automatic control valves to confirm proper system operation.
 - Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.11 ADJUSTING

- A. Adjust automatic control valves to provide flow rate at rated operating pressure required for each sprinkler circuit.
- B. Adjust sprinklers and devices, except those intended to be mounted aboveground, so they will be flush with, or not more than 1/2 inch above, finish grade.
- C. Check area coverage at each sprinkler. Relocate heads to provide specified coverage. Adjust spray nozzles, variable arcs, rotary head arc limits, and spray distance to minimize overspray on to non-planting areas. Replace clogged nozzles and heads.

3.12 DEMONSTRATION

- A. After contractor has verified that all equipment is operating correctly and sprinkler coverage has been adjusted; demonstrate in presence of owner's maintenance personnel or representative.
- END OF SECTION

IRRIGATION SPECIFICATIONS FOR:

KELSO HIGH SCHOOL PRACTICE FIELDS
A SITE LOCATED IN THE CITY OF KELSO, WASHINGTON



Know what's below.
Call before you dig.



DESIGNED:
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CHECKED:
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MARCH 2022
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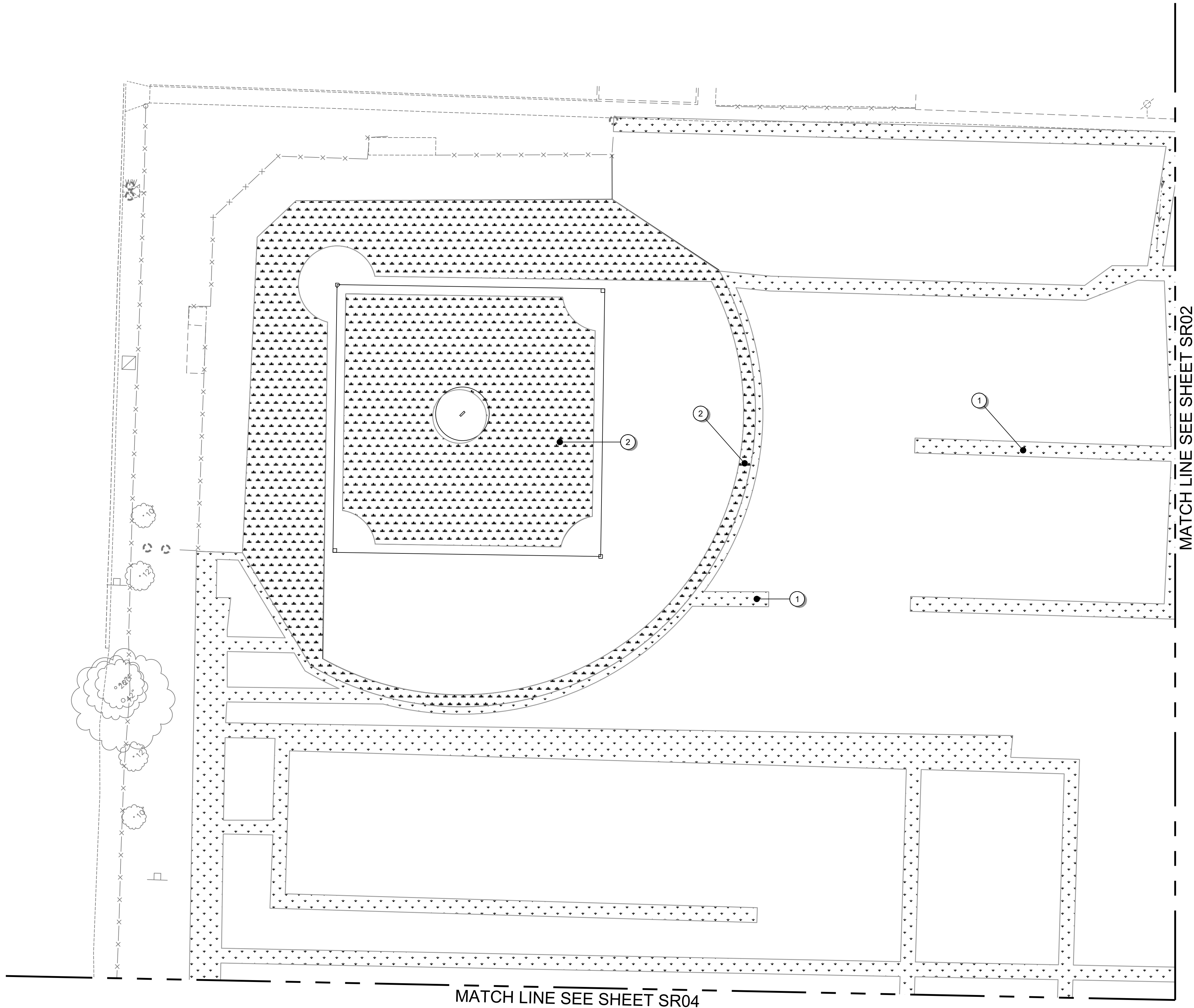
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SHEET **23** OF **29**

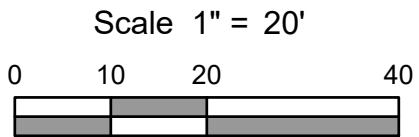
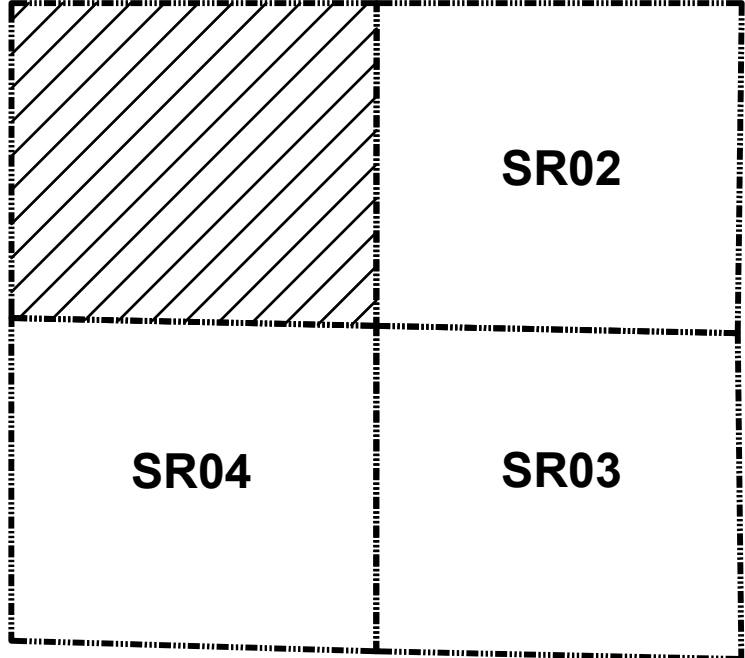
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MATCH LINE SEE SHEET SR02

MAP LEGEND



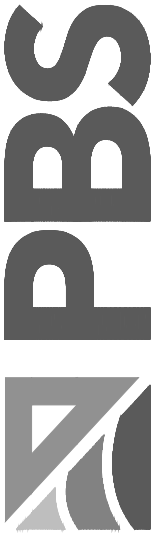
GENERAL NOTES

1. ALL DISTURBED AREAS SHALL BE RESTORED TO PRE-EXISTING CONDITIONS. ADDITIONAL SEEDING MAY BE REQUIRED.

CONSTRUCTION NOTES

- ① HYDROSEED AREA USING SPORT FIELD SEEDING MIX AS IDENTIFIED IN THE SEEDING LIST. SEE SHEET SR05 FOR SOIL PREPARATION WORK PER DETAIL "TRENCH OVERSEEDING SECTION" AND "GRASS SOIL CROSS SECTION".
- ② SOD AREA AS IDENTIFIED IN THE SEEDING LIST. SEE SHEET SR05 FOR SOIL PREPARATION WORK PER DETAIL "SOD SOIL CROSS SECTION"

PBS Engineering and
Environmental Inc.
5225 SE Test Center Drive,
Portland, OR 97206
Vanouver, WA 98683
360.895.3488
pbsusa.com



RESTORATION PLAN FOR:
KELSO HIGH SCHOOL PRACTICE FIELDS
A SITE LOCATED IN THE CITY OF KELSO, WASHINGTON



Know what's below.
Call before you dig.



DESIGNED:
RWP

CHECKED:
OAG

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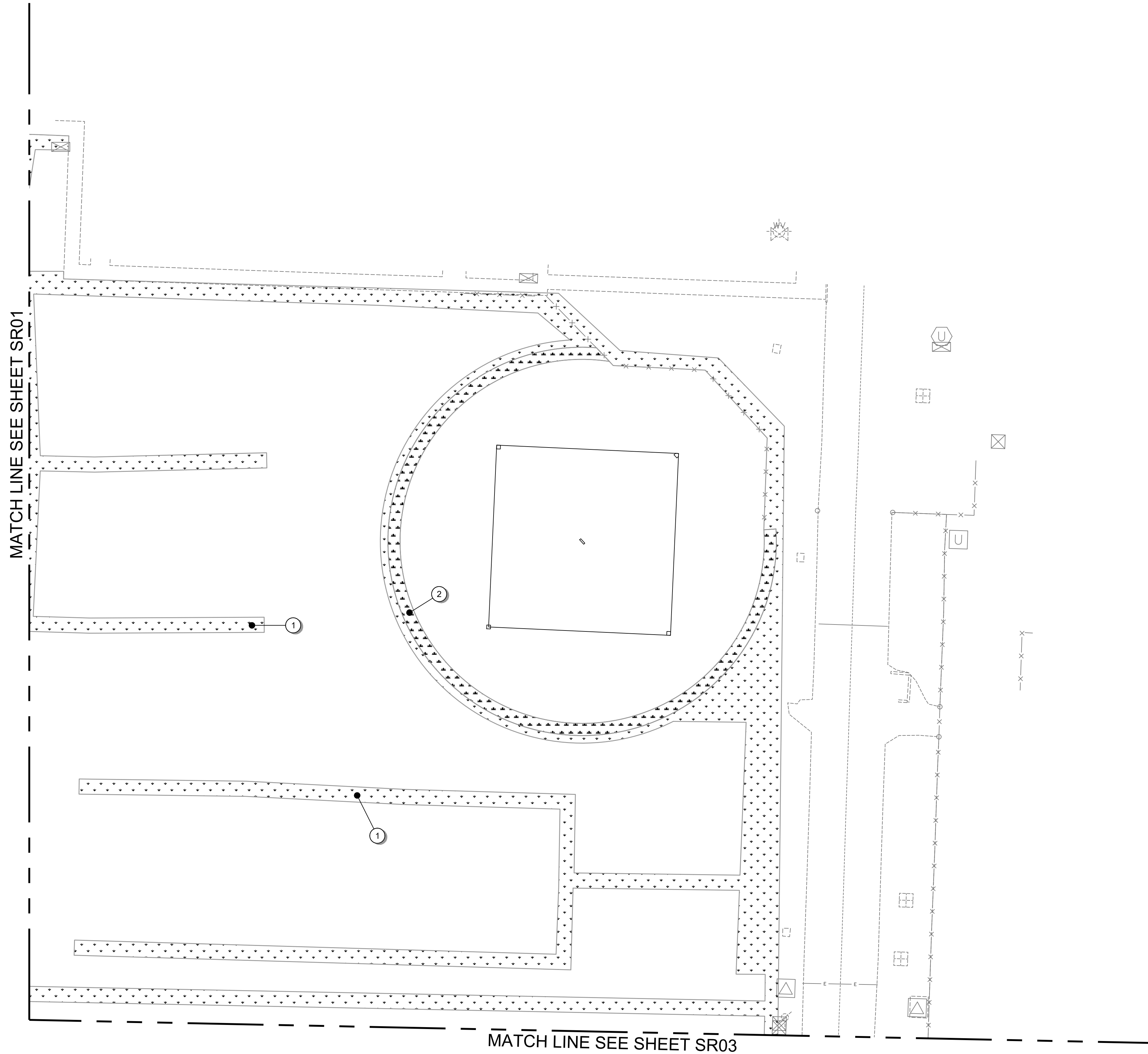
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SR01

SHEET **24** OF **29**

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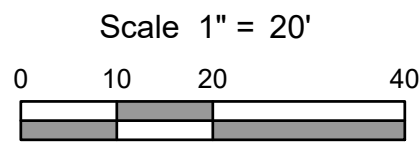
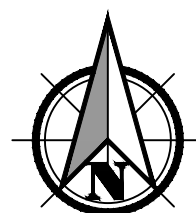
MAP LEGEND	
SR01	
SR04	
SR03	

GENERAL NOTES

1. ALL DISTURBED AREAS SHALL BE RESTORED TO PRE-EXISTING CONDITIONS. ADDITIONAL SEEDING MAY BE REQUIRED.

CONSTRUCTION NOTES

1. HYDROSEED AREA USING SPORT FIELD SEEDING MIX AS IDENTIFIED IN THE SEEDING LIST. SEE SHEET SR05 FOR SOIL PREPARATION WORK PER DETAIL "TRENCH OVERSEEDING SECTION" AND "GRASS SOIL CROSS SECTION".
2. SOD AREA AS IDENTIFIED IN THE SEEDING LIST. SEE SHEET SR05 FOR SOIL PREPARATION WORK PER DETAIL "SOD SOIL CROSS SECTION"

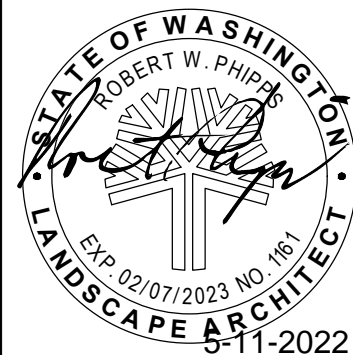


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RESTORATION PLAN FOR:
KELSO HIGH SCHOOL PRACTICE FIELDS
A SITE LOCATED IN THE CITY OF KELSO, WASHINGTON



DESIGNED:
RWP

CHECKED:
OAG

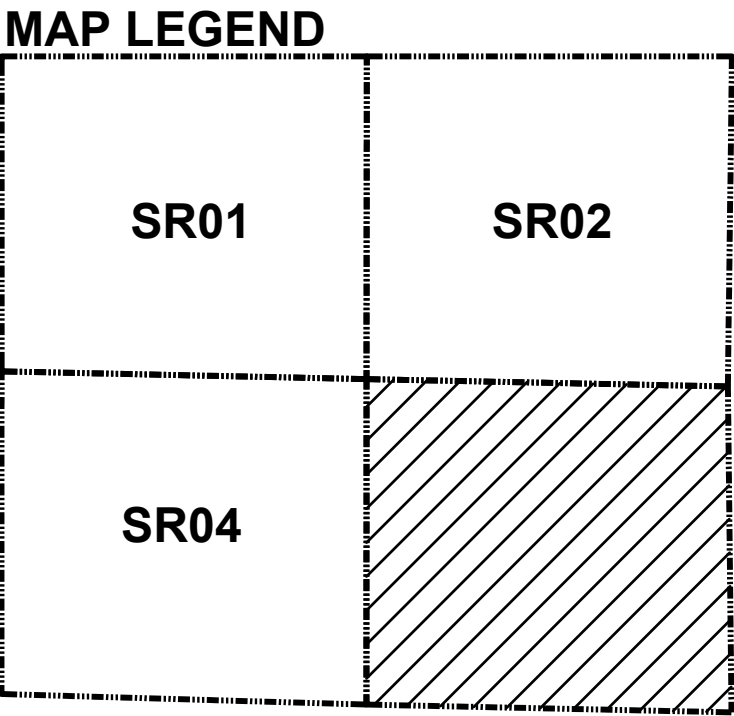
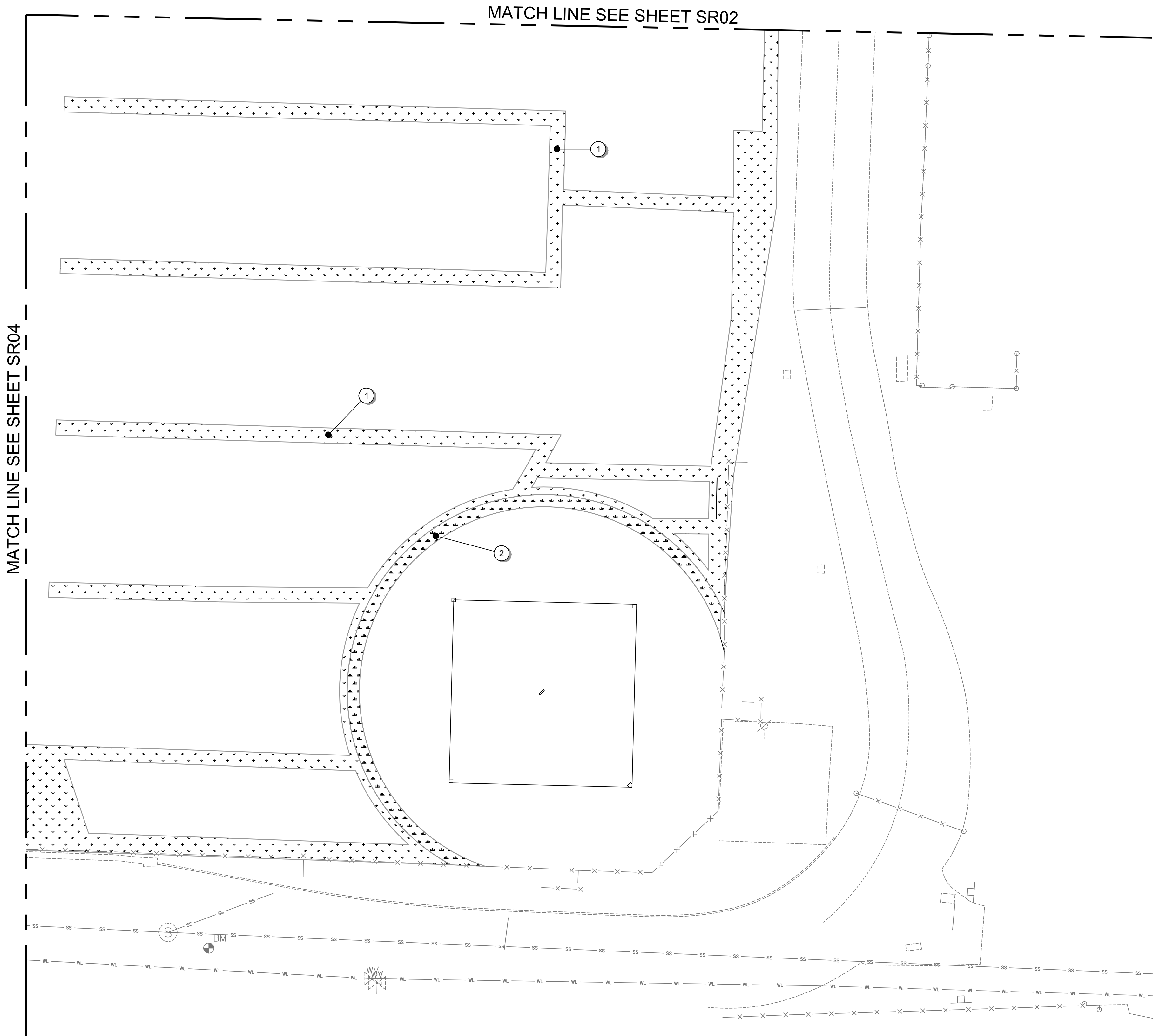
MARCH 2022
71853-000

SHEET ID

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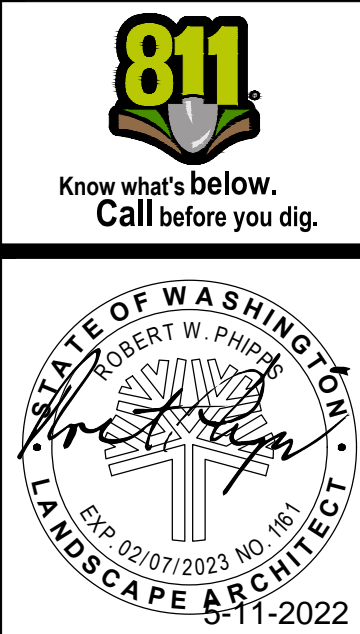
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- GENERAL NOTES**
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- CONSTRUCTION NOTES**
1. HYDROSEED AREA USING SPORT FIELD SEEDING MIX AS IDENTIFIED IN THE SEEDING LIST. SEE SHEET SR05 FOR SOIL PREPARATION WORK PER DETAIL "TRENCH OVERSEEDING SECTION" AND "GRASS SOIL CROSS SECTION".
2. SOD AREA AS IDENTIFIED IN THE SEEDING LIST. SEE SHEET SR05 FOR SOIL PREPARATION WORK PER DETAIL "SOD SOIL CROSS SECTION"

RESTORATION PLAN FOR:
KELSO HIGH SCHOOL PRACTICE FIELDS
A SITE LOCATED IN THE CITY OF KELSO, WASHINGTON



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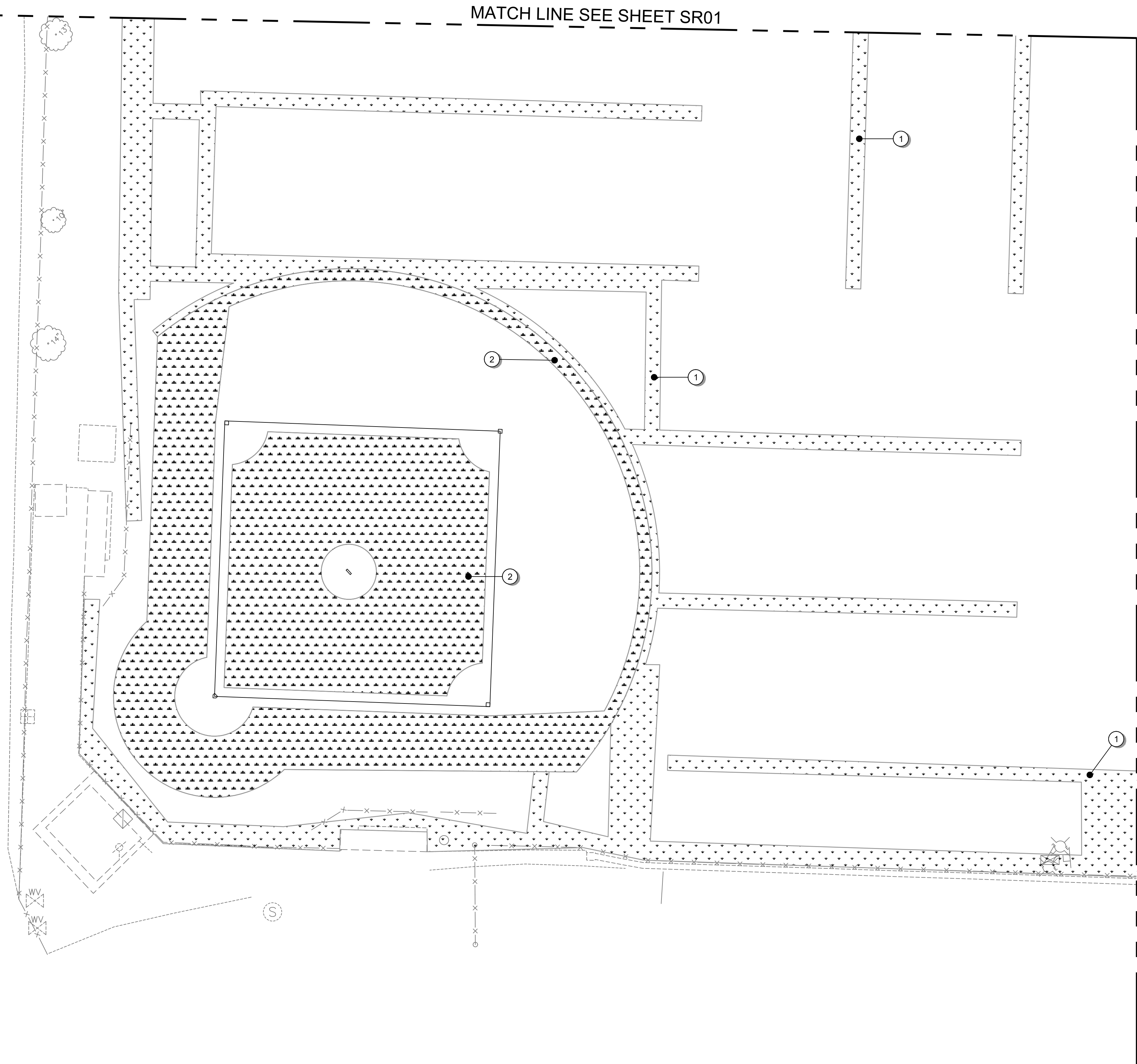
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SR03

SHEET **26** OF **29**



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MATCH LINE SEE SHEET SR03

MATCH LINE SEE SHEET SR01

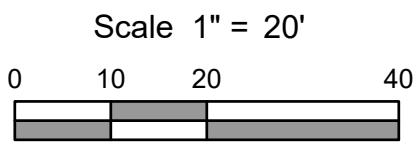
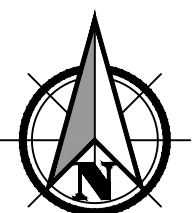
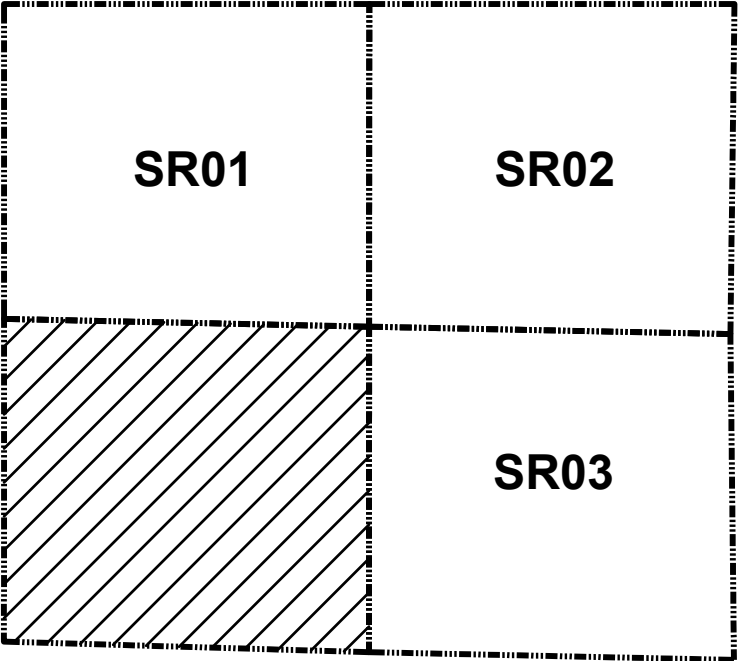
GENERAL NOTES

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CONSTRUCTION NOTES

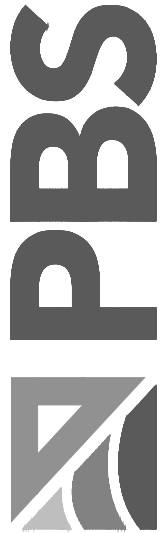
- ① HYDROSEED AREA USING SPORT FIELD SEEDING MIX AS IDENTIFIED IN THE SEEDING LIST. SEE SHEET SR05 FOR SOIL PREPARATION WORK PER DETAIL "TRENCH OVERSEEDING SECTION" AND "GRASS SOIL CROSS SECTION".
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MAP LEGEND

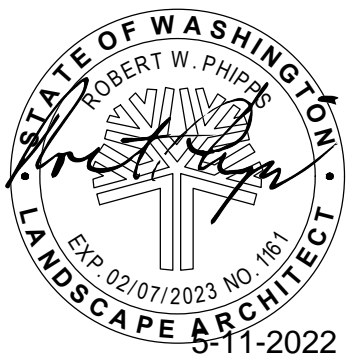


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RESTORATION PLAN FOR:
KELSO HIGH SCHOOL PRACTICE FIELDS
A SITE LOCATED IN THE CITY OF KELSO, WASHINGTON



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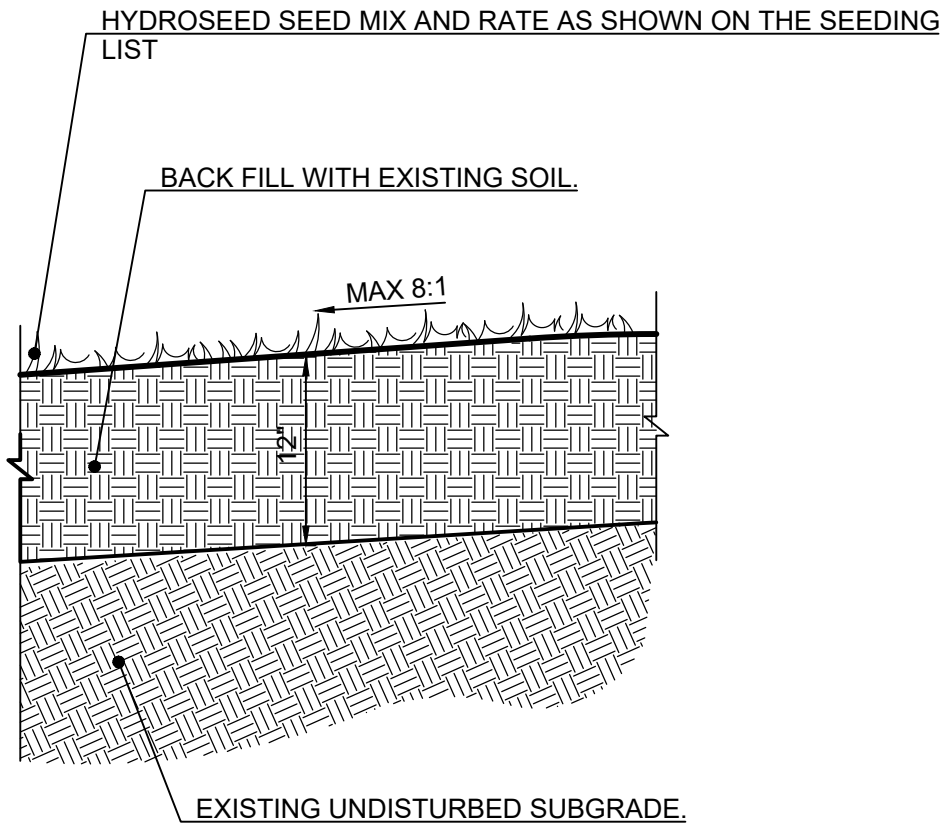
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SHEET **27** OF **29**

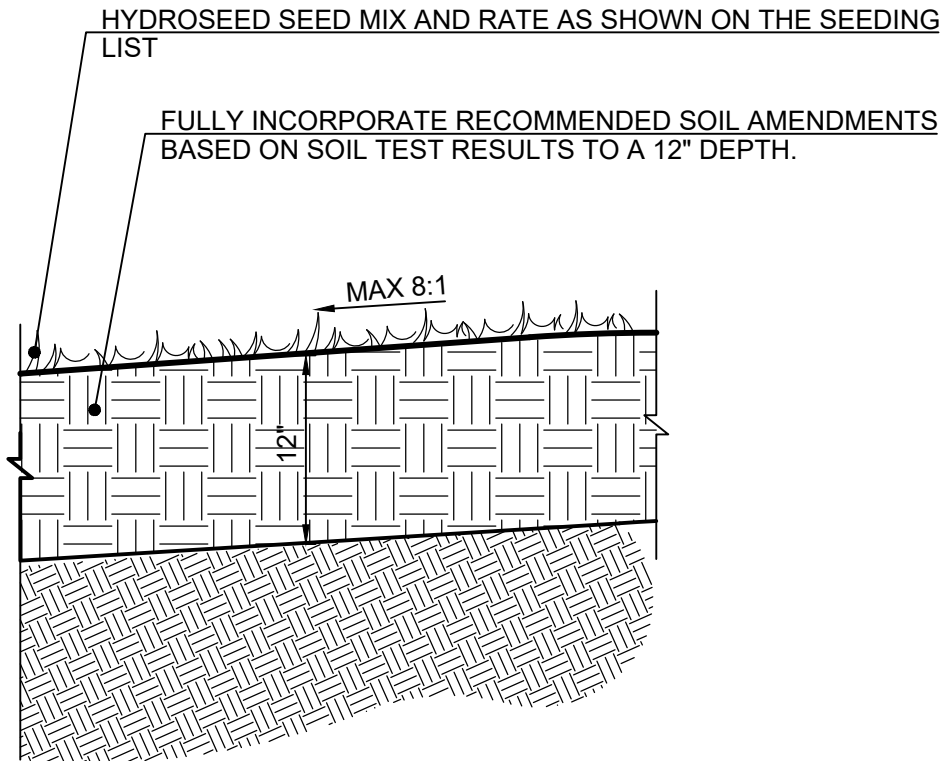
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NOTE: PRIOR TO COMMENCEMENT OF WORK CONTRACTOR SHALL PROVIDE A SOIL ANALYSIS AND A WRITTEN REPORT BY A QUALIFIED SOIL-TESTING LABORATORY STATING PERCENTAGES OF ORGANIC MATTER; GRADATION OF SAND, SILT, AND CLAY CONTENT; CATION EXCHANGE CAPACITY; AND pH OF THE SOIL TO THE LANDSCAPE ARCHITECT.

Grass Soil Cross Section

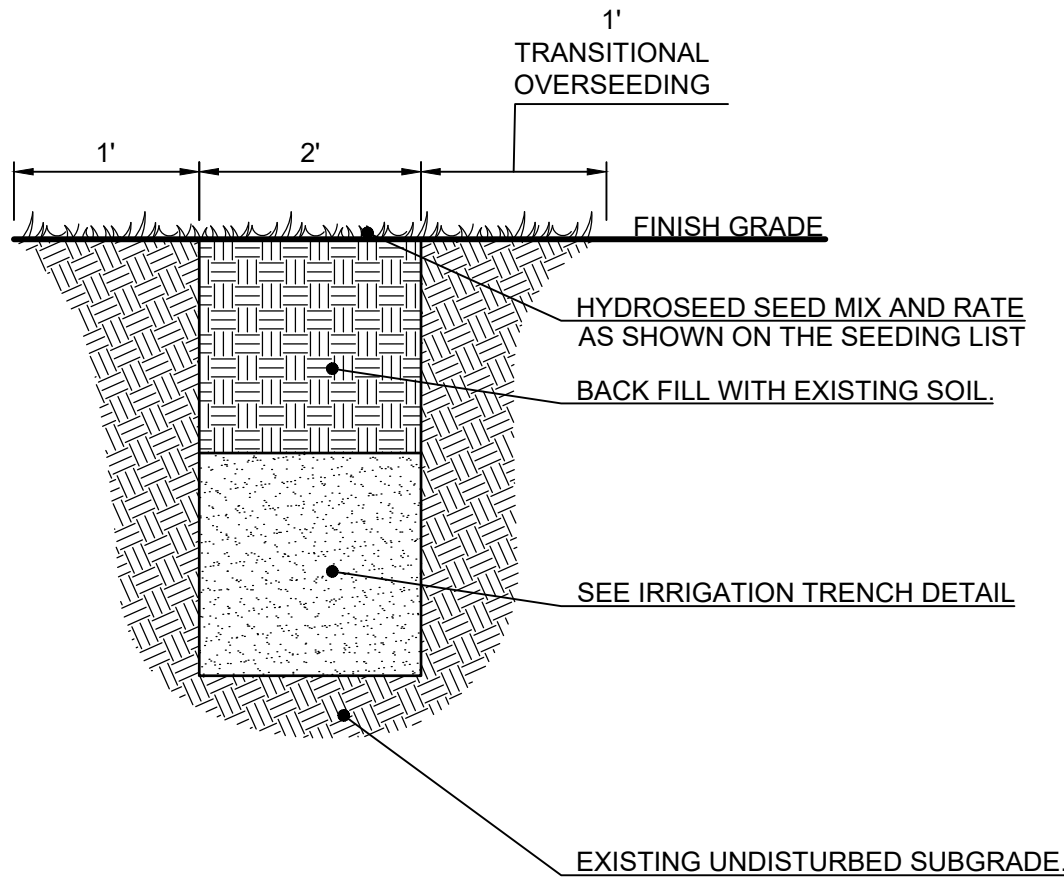
NOT TO SCALE



NOTE: PRIOR TO COMMENCEMENT OF WORK CONTRACTOR SHALL PROVIDE A SOIL ANALYSIS AND A WRITTEN REPORT BY A QUALIFIED SOIL-TESTING LABORATORY STATING PERCENTAGES OF ORGANIC MATTER; GRADATION OF SAND, SILT, AND CLAY CONTENT; CATION EXCHANGE CAPACITY; AND pH OF THE SOIL TO THE LANDSCAPE ARCHITECT.

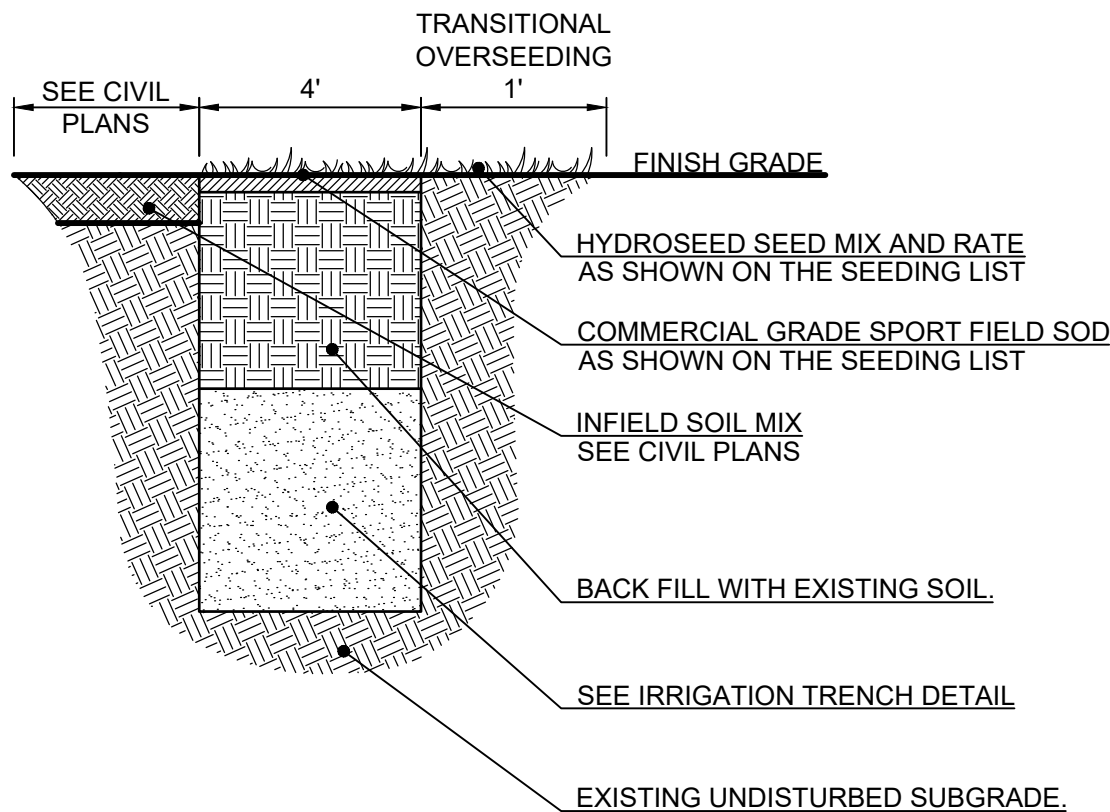
Contingency - Soil Cross Section

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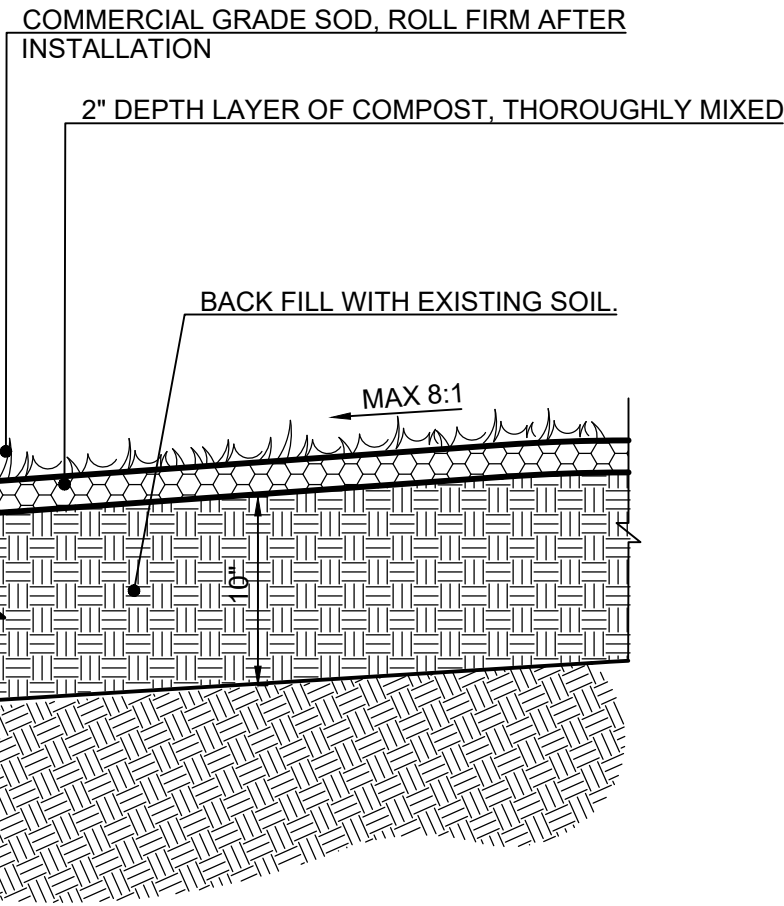
Trench Overseeding Section

NOT TO SCALE



Sod to Overseeding

NOT TO SCALE



NOTE: PRIOR TO COMMENCEMENT OF WORK CONTRACTOR SHALL PROVIDE A SOIL ANALYSIS AND A WRITTEN REPORT BY A QUALIFIED SOIL-TESTING LABORATORY STATING PERCENTAGES OF ORGANIC MATTER; GRADATION OF SAND, SILT, AND CLAY CONTENT; CATION EXCHANGE CAPACITY; AND pH OF THE SOIL TO THE LANDSCAPE ARCHITECT.

Sod Soil Cross Section

NOT TO SCALE

SEEDING LIST					
SYM	SPECIES MIX	PLS (by acre)	DESIRED %	Comments	QTY
SPORT FIELD SEEDING					
	<i>Lolium perenne</i> var <i>Dasher 3</i> Dasher 3 Perennial Ryegrass	105.00	30%	SEED SPECIES COMPOSITION AS FROM SUNMARK SEEDS OR APPROVED EQUAL. HYDROMULCHING APPLICATIONS SHALL BE APPLIED WITH FLEXTERRA AS FROM PROFILE PRODUCTS OR APPROVED EQUAL.	40,000 SF (.91 acres)
	<i>Festuca arundinacea</i> var <i>crossfire 3</i> Crossfire 3 Turf Type Tall Fescue	91.00	26%		
	<i>Festuca rubra</i> spp. <i>fallax</i> var <i>windward</i> Windward Chewings Fescue	77.00	22%		
	<i>Poa pratense</i> var <i>armada</i> Armada Kentucky Bluegrass	77.00	22%		
	Commercial Grade Sport Field Sod	100%	100%	SOD UTILIZING LOCALLY GROWN GRASS SPECIES WITH AT LEAST THREE VARIETIES OF PERENNIAL RYE, KENTUCKY BLUEGRASS OR FESCUE.	29,400 SF (0.67 acres)

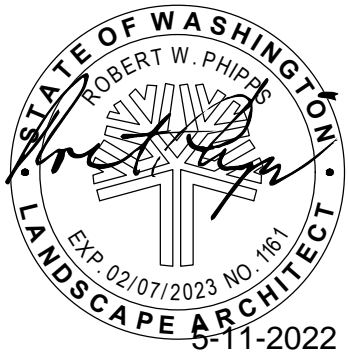
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RESTORATION DETAILS FOR:
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GRASS AREAS
PART 1 - GENERAL

- 1.1 SUMMARY OF WORK:** Topsoil testing; soil preparation; establishment of fine finished grading; installation of grass areas; submittal requirements; maintenance and warranties.
- 1.2 SUBMITTALS**
- A. Topsoil:
- For soil type and source (native), furnish soil analysis and a written report by a qualified soil-testing laboratory stating percentages of organic matter, gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of the soil.
 - Submit test results to Landscape Architect for approval prior to installation seeding/sodding of grass areas.
- B. Compost:
- Provide source and testing analysis in accordance with U.S. Composting Council Testing Methods for the Examination of Compost and Composting (TMECC) stating sieve size, pH, physical contaminants, organic matter, soluble salt content, maturity and stability.
 - Submit test results to Landscape Architect for approval prior to installation of plant material and/or seeding/sodding of lawn areas.
- C. Seed Mixes: Provide source and grass species in accordance with species and percentages indicated in the Plans, with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed.
- Provide testing results from the Washington State Department of Agriculture (WSDA) showing:
 - Common and botanical name
 - Lot number
 - Net weight
 - Pounds of Pure Live Seed (PLS) in the mix
- The results shall be within six months prior to date of application. Adjustments of the PLS mix shall be provided by the Landscape Architect to compensate any species lacking the minimum percent of germination and pure seed.
- D. Sod: Provide source and grass species composition in accordance with the Plans.
- 1.3 DELIVERY, STORAGE AND HANDLING**
- A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws if applicable.
- 1.4 PROJECT CONDITIONS**
- A. Utilities:
- Call for utility locate a minimum of 48 hours, but no more than 10 days, in advance of work. Perform work in a manner that will avoid damage, hand excavate as needed. Repair all damage to the satisfaction of the utility owner at no cost to owner.
 - Do not interrupt services or utilities to facilities occupied by Owner or others unless permitted or only after arranging to provide temporary services or utilities as required.
- B. Seeding Restrictions:
- Hydroseed operations shall be completed once irrigation is fully operational.
 - Weather Limitations: Proceed with hydroseeding only when existing and forecasted weather conditions permit seeding to be performed when beneficial and optimum results may be obtained. Seeding will not occur during freezing temperatures or frozen ground.
 - Condition: When conditions detrimental to seed establishment are encountered, such as rubble fill, adverse drainage conditions, or obstructions, notify the Landscape Architect before seeding. All existing or recent areas disturbed by construction operations shall be restored to pre-existing condition.
- 1.7 WARRANTY**
- A. Duration: All seeding and related workmanship of installation beginning after written acceptance or work, for one year or one full growing season, whichever is longer.
- B. Replacement: Installer agrees to repair or replace seeded and accessories that fail in materials, workmanship, or growth within specified warranty period.
- C. Corrections:
- Correct deficiencies in soil or drainage conditions and watering cycles when identified to contribute to establishment failure.
 - Replacement of seeding areas not providing a coverage of 70% minimum after a 6 month period shall be reseeded for areas identified.
 - Provide extended warranty for period equal to original warranty period, for replaced seeded areas.

PART 2 - PRODUCTS

- 2.1 SEED:** State-certified seed of grass species as follows, with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed
- 2.3 SOD:** Certified, complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable and local sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted.
- 2.4 FERTILIZERS AND SOIL AMENDMENTS:** For fertilizers, comply with applicable state laws; deliver to job site in unopened containers each bearing manufacturer's label of content.
- A. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 1-4 percent nitrogen and 10-20 percent phosphoric acid depending on soil test results.
- B. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.
- C. Organic Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen. Oragnic 10-10-5 or approved equal.
- D. Lime: Provide lime in form of ground dolomitic limestone.
- E. Perlite: Horticultural perlite, soil amendment grade.
- F. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through No. 50 sieve.
- G. Sand: Clean, washed, natural or manufactured, and free of toxic materials.
- H. Diatomaceous Earth: Calcined, 90 percent silica, with approximately 140 percent water absorption capacity by weight.
- I. Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.
- 2.5 TEXTURAL SOIL AMENDMENT**
- A. Compost: Well-composted, stable, and weed-free organic matter.
- Feedstock Source: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.
 - 100 percent passing through 1-inch sieve;
 - pH range of 6 to 8.5; moisture content minimum 35 to 55 percent by weight;
 - Organic Matter: Minimum 40 percent of dry weight.
 - Soluble salt content less than 4.0 mmhos/cm;
 - Stability shall be 7-mg CO2-C/g OM/day or below.
 - Contaminants not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings;
- 2.6 TOPSOIL**
- A. Topsoil Requirements: Topsoil derived from surface soil found at a depth in its natural state or less than 18 inches. Topsoil shall have a pH range of 6 to 7, a minimum of 10% organic material content; 20% - 70% sand content, 20% - 50% silt content, and 5% - 20% clay content; free of stones 1 inch or larger in any dimension and other extraneous materials harmful to plant growth.
- 2.10 WEED CONTROL FABRIC:** Woven non-biodegradable fabric with supplied manufacturer's staples.

PART 3 - EXECUTION

- 3.1 GENERAL**
- A. Scheduling:
- Coordinate work schedule with Owner's Project Representative where cooperation with other contracts is required.
 - Examine areas to receive landscape material for compliance with requirements and conditions affecting installation and performance. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
 - Repair and restore existing landscape as required.
- 3.2 FINISH GRADES**
- A. Establish slopes in accordance with Civil Grading Plan.
- Fine grade to uniform slopes, free of low spots or irregularities.
 - Slope grades away from all building structures.
 - Slopes grades to all area drains and catch basins as per Civil Grading Plans. Allow no ponding of water.
 - Verify with Civil Engineer that finish grades meet grading plan prior to planting.
- B. Grade planting areas to accommodate the required depths of compost and bark mulch.
- 3.3 PLANTING AREA WEED CONTROL**
- A. All seeded areas shall be prepared so that they are weed and debris free at the time of seeding and until completion of the project. At no time during the life of the Contract shall the Contractor allow weeds and unwanted vegetation to reach seed stage. All applications of post-emergent herbicides shall be made while green and growing tissue is present. Should unwanted vegetation reach the seed stage, in violation of these Specifications, the Contractor shall physically remove and bag the seed heads. All physically removed vegetation and seed heads shall be disposed of off site at no cost to the Contracting Agency.
- 3.4 SOIL PREPARATION**
- A. General: Loosen or cultivate subgrade of lawn areas to a minimum depth of 12 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
- B. Soil Amendment: Spread soil amendment as recommended and fully incorporate to a 12 inch depth. Allow amended topsoil to settle. Apply additional amendment to produce final grades.
- C. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades. Before planting, obtain Landscape Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading. Where landscape areas are excavated to finish grades as shown in the Civil Grading Plans, it may not be necessary to place topsoil if finish grade meets topsoil specification requirements.
- 3.5 HYDRO SEEDING**
- A. Hydro Seeding: Mix specified seed, fertilizer, and HECF mulch in water, using equipment specifically designed for hydro seed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
- Apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than 1500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate or,
- 3.6 SOD INSTALLATION**
- A. Bed Preparation:
- Immediately prior to laying sod, bring areas to an even, smooth machine grade, removing all hard and soft areas and irregularities that impede surface drainage.
- B. Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.
- C. Saturate sod with fine water spray within two hours of planting. Fertilize with a slow release, low nitrogen, liquid fertilizer.
- During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod. Fertilize with a slow release, low nitrogen, liquid fertilizer.
- 3.6 CONTRACT PERIOD MAINTENANCE**
- A. Begin immediately after completion of approved initial planting and till closeout after warranty period for one year.

END OF SECTION

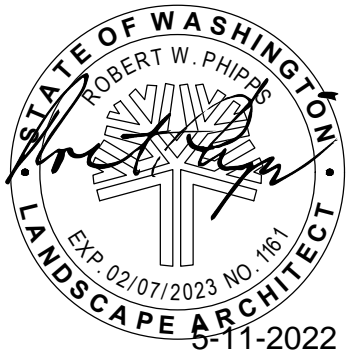
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SEEDING SPECIFICATIONS FOR:
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