

SEEDING FOR EROSION CONTROL

RECOMMENDED PLANTING SEASON	PERMANENT RURAL SEED MIX ITEM 164 - DRILL SEEDING (PERM) (RURAL) (CLAY)	PERMANENT URBAN SEED MIX ITEM 164 - DRILL SEEDING (PERM) (URBAN) (CLAY)	TEMPORARY DRILL SEED MIX ITEM 164 - DRILL SEED (TEMP) (WARM OR COOL)
WARM SEASON Mar. 15th, April, May, June, July, August, Sept. 15th	Pure Live Seed Rate Green Sprangletop (Van Horn) - 1.0 lbs/AC Sideoats Grama (Haskell) - 1.0 lbs/AC Texas Grama (Atascosa) - 1.0 lbs/AC Hairy Grama (Chaparral) - 0.3 lbs/AC Shortspike Windmillgrass (Welder) - 0.2 lbs/AC Little Bluestem (OK Select) - 0.8 lbs/AC Purple Prairie Clover (Cuero) - 0.6 lbs/AC Engelmann Daisy (Eldorado) - 0.75 lbs/AC Illinois Bundleflower - 1.3 lbs/AC Awnless Bushsunflower (Plateau) - 0.2 lbs/AC	Pure Live Seed Rate Green Sprangletop (Leptochloa dubia) - 0.3 lbs/AC Sideoats Grama (El Reno) (Bouteloua curtipendula) - 3.6 lbs/AC Buffalograss (Texoka) (Buchloe dactyloides) - 1.6 lbs/AC Bermudagrass (Cynodon dactylon) - 2.4 lbs/AC	Pure Live Seed Rate Foxtail Millet (Setaria italica) - 34 lbs/AC
COOL SEASON Sept 16th, Oct, Nov, Dec, Jan, Feb, Mar 14th			Pure Live Seed Rate Tall Fescue (Festuca arundinaceae) - 4.5 lbs/AC Western Wheatgrass (Agropyron smithii) - 5.6 lbs/AC Red Winter Wheat (Triticum aestivum) - 34 lbs/AC

SEEDING NOTES:

1. Refer to Item 164 of the Texas Standard Specifications for Construction of Highways, Streets, and Bridges 2014 for specifications, dimensions, volumes, and measurements that have been modified or not shown.
2. Apply seed upon completion of each construction stage (dependent on planting date requirements) without compensation for additional move-ins.
3. All seed will meet labeling, delivery, analysis, and testing requirements as described in Item 164.2.1.
4. Hydroseeding machines will not be allowed.
5. Fertilizer will be applied under Item 166 prior to seeding to help drill fertilizer into soil.
6. Refer to Item 166 Fertilizer this sheet for specifications.
7. All areas to be seeded will be cultivated to a depth as described in Item 164.3 before both temporary and permanent seeding.
8. Seed will be drilled to a depth as described in Item 164.3.4.
9. Vegetative watering will be paid for under Item 168 as shown on this sheet.
10. **BROADCAST SEEDING METHOD OF APPROPRIATE PERMANENT OR TEMPORARY SEED MIX MAY ONLY BE USED WHERE SITE CONDITIONS PREVENT DRILL SEEDING.**

FERTILIZER ITEM 166 FERTILIZER AC

FERTILIZER RATE
Unless otherwise stated in the plans, perform one soil analysis on each project before fertilization and submit results to the Engineer with recommended fertilizer rates based on soil analysis. Soil analysis may be waived if both compost and sod are used on entire project.

FERTILIZER NOTES:

1. Refer to Item 166 of the Texas Standard Specifications for Construction of Highways, Streets, and Bridges 2014 for specifications, dimensions, volumes, and measurements that have been modified or not shown.
2. Fertilizer will be applied before seeding and sodding.
3. Fertilizer will be delivered in bags unless otherwise specified or approved prior to delivery. Bags will be clearly labeled showing contents. When non-bagged, loose fertilizer is approved, documentation will be required for each load of material delivered verifying authenticity of material.
4. Fertilizer will be granular and essentially dust free.
5. Do not exceed 60 lbs of Nitrogen per acre without consulting with the Engineer.

VEGETATIVE WATERING FOR ESTABLISHING SEED AND SOD ITEM 168 VEGETATIVE WATERING MG

WATERING SCHEDULE			
SEASON (Usual Months)	RATE	TIME SCHEDULE	TOTAL WATER ESTIMATE
SPRING & FALL (March, April, May, October)	7000 gallons/acre per working day	Vegetative watering for seed shall begin on the day after rainfall described below and continue for 60 consecutive working days;	420,000 gallons/acre (60 working days)
SUMMER (June, July, August, September)	12,000 gallons/acre per working day	vegetative watering for sod shall begin on the day the sod is placed and continue for a minimum of 15 consecutive working days.	720,000 gallons/acre (60 working days)
WINTER (November through February)	1000 gallons/acre per working day	Vegetative watering for seed and/or sod shall begin on the day after placement for 15 consecutive working days	15,000 gallons/acre (15 working days)

Rate and frequency may be adjusted, with the approval of the Engineer, to meet site conditions (especially with sod).
For informational purposes only: 1,000 gallons equals 1 MG

VEGETATIVE WATERING NOTES:

1. Refer to Item 168 of the Texas Standard Specifications for Construction of Highways, Streets, and Bridges 2004 for specifications, dimensions, volumes, and measurements that have been modified or not shown.
2. Watering operations for warm season grasses shall be delayed until soil temperature exceeds 70 degrees F.
3. **After drill seeding, postpone watering operations until the site receives at least 1/2" of natural rainfall in a single day. Use Vegetative Watering to keep the seed bed moist during germination; not to provide the initial watering.**
4. Provide even spray patterns that do not disturb seed bed and/or dislodge seed from seed bed.
5. Water will be evenly distributed over entire area(s) designated for seeding and/or sodding.
6. If 1/4 inch or more of rainfall occurs on site on any given working day, no vegetative watering will be needed on that working day (Note: 1/4 inch rain equals 7000 gallons of water per acre).
7. **Should the Contractor fail to apply the specified amount of water within the time allowed any seed or sod in poor condition will be replaced, fertilized, and watered at the Contractor's expense.**
8. No watering applications between the hours of 1:00 pm and 8:00 pm when daytime temperatures exceed 95 degrees.
9. After initial establishment period, provide intermittent watering (approx. 1"/week) to newly established seed or sod during summer months until end of contract.
10. All watering equipment will have a metering device.

REQUIRED ITEMS:	SEQUENCE OF WORK:
<ul style="list-style-type: none"> • COMPOST MANUFACTURED TOPSOIL • FERTILIZER TO BE USED WITH ALL SEEDING AND MOST SODDING. • VEGETATIVE WATERING TO BE USED WITH ALL SEEDING AND SODDING. • ONLY BROADCAST SEED IN AREAS THAT CANNOT DRILLED OR SODDED. 	PREPARE SOIL WITH COMPOST APPLY FERTILIZER PLACE SEED AND/OR SOD APPLY WATER FOR SEED AND SOD AREAS MOW TO PROMOTE WARM SEASON GRASSES

SODDING FOR EROSION CONTROL ITEM 162 BLOCK SOD (BERMUDA) SY

BLOCK OR ROLL SOD	
COMMON NAME	BOTANICAL NAME
Common Bermuda Grass	Cynodon dactylon

SODDING NOTES:

1. Refer to Item 162 of the Texas Standard Specifications for Construction of Highways, Streets, and Bridges 2014 for specifications, dimensions, volumes, and measurements that have been modified or not shown.
2. All sod (blocks or rolls) will be placed within 24 hours of delivery to the site.
3. Sod will be placed only after soil preparation is complete and fertilizer has been applied to soil.
4. Sod blocks will be placed firmly against adjacent sod blocks.
5. Sod will be placed with joints alternating on each row to prevent all joints from lining up.
6. Vegetative watering will be paid for under Item 168 as shown on this sheet. Sod will be watered immediately following placement. Hot, dry soil may require pre-watering before placing sod.

COMPOST APPLICATION ITEM 161 COMPOST MANF. TOPSOIL (BOS) (4") SY

APPLICATION RATE
A one inch uniform layer of compost will be placed on grade with topsoil. (Additional topsoil may be required to be imported.) Incorporate compost into the soil (by till or disk) to a three to four inch (3 - 4") depth.

COMPOST NOTES:

1. Refer to Item 161 - Compost for specifications, dimensions, volumes, and measurements that have been modified or not shown.
2. Erosion Control Compost (ECC) will be used to control erosion on slopes. ECC will be used in lieu of Soil Retention Blankets and other slope applications on slopes 3:1 and flatter. The ECC will be uniformly placed on the slope in a minimum one inch layer.
3. Filter berms may be placed in locations where concentration of flow may cause erosion.

ROADSIDE MOWING ITEM 730 PROJECT MAINTENANCE AC

Mowing will be included during project construction. Provide three mowing cycles per year during the project.
Once seed is established, mowing will be used to promote the warm season grasses by mowing any remaining cool season and/or temporary grasses.



VEGETATION ESTABLISHMENT SHEET

(DALLAS DISTRICT)
 TEMPLATE REVISION DATE: 01/12/15

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
PJH	6	(See Title Sheet)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DALLAS		
CHECK	CONTROL	SECTION	JOB	
XXX				